

CONTRIBUTIONS TOWARDS A KNOWLEDGE OF THE BURMESE FLORA.—  
*Part I.—By S. KURZ.*

[Received May 25th, read August 5th, 1874.]

In the present paper I purpose giving an abridged enumeration of Burmese plants, phanerogamic and cryptogamic, as far as they have come to my knowledge. The Burmese Empire is as yet too incompletely explored for the present communication to be looked upon otherwise than in the light of an attempt at collating the scattered material either published or deposited in Herbaria. An exploration of Ava, the Arracan Yomah and the Chittagong hills, will furnish large additions of Khasya hill plants, while the Tenasserim and Martaban hills abound in Malayan forms.

A bare list would have been of little use to the Indian botanist and still less so to the resident in Burma; I have, therefore, given short outlines of the distinctive characters of the genera as well as of the species. Such conspectuses are not always based upon sound characters, which in many cases can only be ascertained by a close examination of all the species composing the several genera; but still they will be found serviceable for handy identification of the plants of the better explored provinces of Burma. In the framing of the generic tables, I have chiefly followed the authors of the 'Genera Plantarum.' Of citations I have given only a selection, giving preference to illustrations. The remaining synonyms or references to synonyms may be found in Hooker's Flora of British India so far as that work has been published.

I have avoided as much as possible critical discussions, and have taken in hand only essential matters: to have done otherwise would only have increased the bulk of my contributions without materially assisting in the encouragement of the exploration of the Burmese Flora; for which purpose this enumeration is written.

I have also given further particulars about the habitats of the species and notices about frequency. Such are necessarily understood to refer only to provinces wherein I have myself travelled (Andamans, Pegu, Prome, Martaban and partially Arracan and Chittagong): information regarding the rest had to be compiled from herbarium-material. Flowering and fruiting time are given, but cannot always be relied upon, for the reason that contradictory dates are sometimes given by collectors.

I wished to have introduced here the soil question from an Indian point of view, but defer doing so until my experiences in this direction are more matured and have been verified by future explorations. In Burma my attention was directed more towards the woody vegetation, and the necessary information as regards this will be given elsewhere. Herbaceous

growth is for the greater part more regulated by physical and climatal factors, which in connection with moisture, the most powerful element in nature, bring about the greatest changes in vegetation. But still not an inconsiderable number of herbs are found in Burma and elsewhere in India which belong to Unger's class of *soil-steady* (*bodenstaetig*) : such are especially many limestone and laterite plants, and, everywhere, the saline ones. The indication of the forests, etc., in which they grow will, however, at once give a more or less reliable key to the soil-requirements ; the forests being more dependent upon the substratum than the herbaceous growth.

I have purposely selected for the different varieties of Burmese forests general denominations instead of naming them after characteristic trees, as is usually done. The sorts of forests or combinations of forest trees as distinguished by me are, so to say, the exponents of a complex of climatal physical and partially chemical influences which produce everywhere habitually and generically identical or representative equivalents. Thus we have sal-forests in India and eng-forests in Burma ; dry forests in Behar and Northern Hindostan and again in the Prome district ; mixed forests in the low Terai lands of the Himalaya and savannah forests in the Bengal Gangetic alluvium as well as in Burma ; and so it is with the tidal forests, hill-forests, etc.

The distinction between *evergreen* and *deciduous* forests must always be the leading one in tropical countries, and such forests differ always most conspicuously in their vegetative components.

The former are divided into the littoral forests (tidal and mangrove), the result of saline influence ; further into swamp-forests, the product of superabundance of fresh-water and heavy inundations during rains. Then come the tropical forests, which are more regulated by moisture and amount of shade than by substratum, although great differences (not so much habitually as specifically) are observable in those that grow on permeable or on half-permeable strata, on silicious sandstones or on metamorphic or permeable laterites, the latter rich in purely Malayan types, the former poorest of all (with those growing on limestone in Tenasserim I am not acquainted). The last sort of evergreen forests are the hill-forests, rather confusedly huddled together by me, but sufficiently distinguished for present requirements. The lower damper ones of these are a modification of the tropical forests below them, while the drier ones consist chiefly of pines, oaks, *Eriçineæ*, etc., and pass soon into the temperate forests, which contain a great number of winter-deciduous trees but are not represented in Burma except on a few peaks above 6500-7000 feet elevation. Here the slope and resultant amount of light and moisture, and not so much the quality of rock, are the principal regulators, at least so it is on the metamorphic and older formation, while limestone, etc., will form exceptions. Higher up the in-

fluence of elevation modifies and changes vegetation according to well-known laws.

The leaf-shedding or deciduous forests form the other large class of Indian forests, and cover in these regions a greater area than the former. These grow either on impermeable strata, such as compact calcareous sandstones, and form then the "dry forests," where catechu trees and several Hindustani trees and arboreous *Euphorbias* find their home, while higher up on the crests of the Yomah they become formed almost exclusively of an arboreous *Hiptage*, often accompanied by several rather temperate forms like *Heracleum*, *Vaccinium*, *Hymenopogon*, etc. On laterite and gravelly strata, and also on very stiff plastic clay, grows another variety of forest, called by me the open forests. Those growing on the first named strata are especially interesting and are generally known to the Burmans as the eng or ein-forests, so named after the prevailing tree, *Dipterocarpus tuberculatus*; here the botanical rarities of Burma are scattered, and catch the eye the more readily that the surrounding forest is open and the soil-clothing rather scanty; higher up in the hill-eng forests, (which grow on laterite formed by decomposition of older rocks or on debris of them) the eng-tree is often replaced by other kinds of wood-oil trees (chiefly *Dipterocarpus costatus* and *obtusifolius*); while those open forests that occupy the stiff clay at the base of the hills are characterized by the absence of eng.

The last variety of deciduous forests are the mixed forests (as they are called by the forester), in which teak is chiefly found almost always accompanied by pyenkadu (*Xylia*). The upper ones grow either on permeable siliceous argillaceous sandstone, as is the case on the Pegu Yomah, and the trees are then usually very lofty, or on metamorphic and other older strata in Martaban, and in this case they are richer in species but lower in growth, often accompanied by trees which are very rare in the Yomah, such as *Pterocarpus*, *Ternstroemiaceae*, etc. The lower mixed forests occupy the alluvial lands of the greater rivers and gradually pass into the savannah-forests and the true savannahs. Along the larger choungs in the hills where alluvial deposits spread out to a larger extent, similar savannah-forests recur on a smaller scale, but much better grown, and, especially by favourable exposure, much mixed up with trees that are missed in the plains, such as *Erythrina lithosperma*, *Bischoffia Javanica*, etc.

Such is a bird's-eye view of the Burmese forests, of which I have given a more detailed description in my report on the Pegu-forests, and I hope that these cursory notes may in the mean time aid in the understanding of the habitats of the species given in the following pages.

The area comprised by me under the general denomination of Burma is not the political one but includes Ava, Chittagong as far as the Fenny

river, Arracan, Pegu, Martaban (all the country between the Sittang and Salween is thus named by me), Tenasserim and the Andaman islands.

The collections which were at my disposal when working up the Burmese plants are as follows :

1. The large collections of Dr. Wallich and Dr. Brandis. Many of Wallich's Numbers are not contained in the Herbarium of the Botanical Gardens Calcutta, of others only fragments. The latter often proved very useful in the identification of plants collected by myself or others, but were only too often unfit for description in the absence of corresponding specimens collected by others. I experienced therefore much difficulty in dealing with such, especially as the greater part of Wallich's plants are not included in the earlier parts of DeCandolle's *Prodromus*, etc.

2. Drs. Griffith's and Helfer's sets of Burmese plants sent out from Kew. Of the former's collection a set retained by Dr. McClelland to aid in the editing of Griffith's posthumous papers, is still in the Herbarium here and served partially to supplement the incompleteness of the material.

3. Dr. Falconer's Tenasserim collections in the Calcutta herbarium.

4. Mr. Robert Scott's, the Rev. C. Parish's and Rev. Dr. F. Mason's plants, in the Calcutta herbarium, which, especially those of the latter two gentlemen, abound in novelties.

5. Drs. Hooker's and Thomson's Chittagong plants, and also a few plants of the same regions collected by Mr. C. B. Clarke. Only a small collection was made by myself during a very brief stay in 1869.

6. Dr. John Anderson's collections. Of these only the Burmese plants and those collected in the Kakhyan Hills are included here.

7. The collections I myself made in 1867-68, and again in 1870-71, all over Pegu, Prome and part of Martaban.

8. Arracan-plants, chiefly collected by myself and Dr. Schlich. A small collection by Captain Margrave from the same province is contained in the Calcutta herbarium.

9. Dr. Stoliczka and Mr. Theobald, of the Geological Survey of India, both presented to me small collections of Tenasserim plants, containing several new or interesting forms. To this must be added a collection of grasses and other plants, collected in the Prome district by Mr. Eug. Oates, C. E., and a few plants which Mrs. Mason brought home from the Red Karen country.

10. Smaller collections and single plants from various parts of Burma are contained in the Calcutta herbarium, collected by Mrs. Burney, Col. Eyre, Th. Lobb, Dr. McClelland, Belanger, Reynoud, Dr. Cleghorn, O'Riley, Th. Phillippi and others.

11. Dr. Roxburgh's Flora contains numerous contributions to the

Burmese Flora and some of them are still under cultivation in the Botanical garden here.

12. The collections made by myself in 1866 on the Andamans. Dr. Helfer's collections from the same islands were unfortunately mixed up with his Tenasserim plants. In order to avoid as much as possible the introduction of such doubtful stations, I have preferred to look upon such plants invariably as derived from Tenasserim or from the Andamans respectively, in all cases where specimens of the one or other regions already existed in the herbarium here.

13. A collection of plants made by the garden-collectors on various islands of the Andaman and Nicobar islands during Mr. A. O. Hume's ornithological cruise in 1873.

## I. DICOTYLEDONS.

### *RANUNCULACEÆ.*

#### *Conspectus of genera.*

I. *CLEMATIDEÆ*. Sepals valvate. Carpels indehiscent, with a solitary ovule or seed in each. Leaves opposite. Usually woody climbers.

1. *CLEMATIS*. No petals, or if any, these gradually pass into stamens. Leaves without tendrils.

2. *NARAVELIA*. Petals terete, abruptly divided from the stamens. Leaves 2-foliolate.

II. *RANUNCULEÆ*. Sepals imbricate. Carpels with a solitary ascending ovule or seed in each. Achens indehiscent. Herbs or perennials.

3. *RANUNCULUS*. Sepals deciduous. Petals 3 or more.

III. *HELLEBOREÆ*. Sepals imbricate. Petals small, deformed, or sometimes none. Carpels many-seeded, dehiscent. Usually herbs.

4. *NIGELLA*. Petals small, or clawed, never spurred. Carpels more or less connate.

#### *Clematis, L.*

#### *Conspectus of species.*

*Sect. 1. Viticella* : Achens simply beaked, without plumose tails. ... *C. bracteata*.

*Sect. 2. Flammula* : Achens terminating in a plumose tail.

Leaves simple, ..... *C. smilacifolia*.

Leaves divided.

Anthers terminating in a subulate appendage, ..... *C. hedysarifolia*.

Anthers blunt, retuse or acute.

    × Filaments glabrous.

Leaflets serrate, glabrous, shining; flowers small, ..... *C. Gouriana*.

Leaflets entire, tomentose; flowers small, ..... *C. subumbellata*.

    × × Filaments hairy (at least towards the base).

Leaflets shining, glabrous; flowers small, ..... *C. acuminata*.

Leaflets tomentose or pubescent; flowers large, ..... *C. Buchananiana*.

I. *C. BRACTEATA* (*Thalictrum bracteatum*, Roxb., Fl. Ind., II, 671; *C. Cadmia*, Ham. ap. Hf. Fl. Ind. I, 5.)

HAB. Ava, Bhamo. Fl. Jan.

2. *C. SMILACIFOLIA*, Wall. in Asiat. Res., XIII, 414; Hf. Ind. Fl. I. 3; Bot. Mag. t. 4259.—(*C. subpeltata*, Wall. Pl. Asiat. rar. t. 20; *C. Munroana*, Wight Ill. t. 1; *C. inversa*, Griff. Not. Dicot. 700 t. 645, f. 7?)

HAB. Ava, on Taong-dong; Tenasserim, Mergui.

3. *C. HEDYSARIFOLIA*, DC. Syst. I, 148; Hf. Ind. Fl. I. 4.

HAB. Pegu (Hore).

4. *C. GOURIANA*, Roxb. Fl. Ind. II. 670; Wight Ic. t. 933 and 934; Hf. Ind. Fl. I. 4.

HAB. Ava, on Taong-dong. (Wall.) ; Tenasserim, (C. Parish).

5. *C. SUBUMBELLATA*, Kurz in Journ. As. Soc. Bengal, XXXIX, 61.—(*C. floribunda*, Kurz in Seem. Journ. Bot. V. 540, non Pl. et Trian.).

HAB. Martaban, Karen hills (O'Riley).

6. *C. ACUMINATA*, DC. Syst. I. 148; Hf. Ind. Fl. I. 5.

- HAB. Martaban, in the damp hill-forests E. of Toungoo, at 3000 to 4000 ft. elevation. Fr. March.

7. *C. BUCHANANIANA*, DC. Syst. I. 140; Hf. Ind. Fl. I. 6. var. *rugosa*, Hf. and Th. l. c.

HAB. Martaban, Karen hills (Rev. F. Mason, O'Riley).

*Doubtful species.*

1. *C. GROSSA*, Wall. Cat. 4671; Hf. and Th. Fl. Ind. I. 12.—Ava, Tong-dong (Wall.)

**Naravelia, DC.**

*Conspectus of species.*

- Leaflets tomentose or pubescent beneath, ..... *N. Zeylanica*.  
Leaflets quite glabrous, ..... *N. laurifolia*.

1. *N. ZEYLANICA*, DC. Syst. I. 167; Hf. Ind. Fl. I. 7.—(*Atragene Zeylanica*, L. Amoen. I. 405; Roxb. Corom. Pl. II. t. 188, and Fl. Ind. II. 670; *N. dasyoneura*, Korth. in Ned. Kruidk. Arch. I. 208; Miq. Fl. Ind. I/2. 2).

HAB. Frequent in the mixed and dry forests all over Pegu and Prome; also in Ava. Fl. H. S. Fr. C. S.

2. *N. LAURIFOLIA*, Wall. Cat. 4685; Hf. Ind. Fl. I. 7.

HAB. Not unfrequent in the tropical forests of Martaban; also Tenasserim, Mergui (Griff.) Fl. Fr. Febr. March.

**Ranunculus, L.**

*Conspectus of species.*

- A spreading creeping pubescent perennial, ..... *R. diffusus*.  
An erect glabrous somewhat succulent annual, ..... *R. sceleratus*.

1. *R. DIFFUSUS*, DC. Prod. I. 38; Hf. Ind. Fl. I. 19. (*R. subpinna-tus* W. A.; Wight Je. t. 49; *R. vestitus*, Wall. Cat. 4707).

HAB. Ava, Taong dong (Wall.), Khakyen hills, E. of Bhamo (J. Anderson). Fl. Fr. March.

2. *R. SCELERATUS*, L. sp. pl. 776; Engl. Bot. t. 681; Hf. Ind. Fl. I. 19. (*R. Indicus*, Roxb. Fl. Ind. II. 671).

HAB. On moist mud-banks of the Irrawaddi from Prome District down to Pegu (at Henzadah.) Fl. Fr. Febr.-Apr.

### Nigella, L.

\* *NIGELLA SATIVA*, L. sp. pl. 753; DC. Prod. I. 49; Walp. Rep. II. 742. var. *INDICA*, DC. l. c. (*N. Indica*, Roxb. Fl. Ind. II. 646).

HAB. Burmah, cult. according to Dr. Mason (never seen by me).

### DILLENIACEÆ.

#### *Conspectus of genera.*

I. *DELIMEÆ*. Filaments more or less dilated at apex; anthers short, the cells diverging, or rarely parallel. Woody climbers.

1. *DELIMA*. Carpels solitary: ovules 2-3, basilar.

2. *TETRACERA*. Carpels 3-5, ovules many, in 2 series.

II. *DILLENIÆ*. Filaments equal; anther-cells parallel. Trees or herbs.

3. *DILLENA*. Carpels 5-20. Seeds without arillus. Trees.

4. *ACROTREMA*. Carpels 3. Stemless herbs with radical leaves.

### Delima, L.

1. *D. SARMENTOSA*. L. sp. pl. 736; Bot. Mag. t. 3058; Hf. Ind. Fl. I. 31.—(*Tetracera sarmentosa*, Vahl Symb. III. 70, Roxb. Fl. Ind. II. 645). Var. *HEBECARPA*, Hf. and Th. Fl. Ind. I. 61.

HAB. Not unfrequent in the mixed forests all over Burma, from Chittagong and Ava down to Aracan and the Andamans.

### Tetracera, L.

1. *T. ASSA*, DC. Syst. I. 402; Hf. Ind. Fl. I. 31. (*T. trigyna*, Roxb. Fl. Ind. II. 645).

HAB. Chittagong (Hf. and Th.).

Another species with large leaves of a thin texture, when fullgrown quite glabrous, is not unfrequent in the swamp-forests of the Irrawaddi alluvium in Pegu. It is no doubt a new species but, unfortunately, I could obtain neither flowers nor fruits.

### Acotrema, Jack.

1. *A. COSTATUM*, Jack in Mal. Misc. ex Hook. Bot. Misc. II. 82; Hf. Ind. Fl. I. 32. (*A. Wightianum*, WA; Wight Je. t. 9).

HAB. Tenasserim, Moulmein.

**Dillenia, L.***Conspectus of species.*

*Sect. 1. Eudillenia.* Petals white. Seeds with hairy borders, flowers very large, *D. Indica*.  
*Sect. 2. Colbertia.* Seeds smooth. Flowers yellow.

\* Calyx tomentose or pubescent.

O Flowers very large (petals about 2 in. long).

Peduncles 1½ to 2 in. long, straight; styles 12; petioles about 1 in. long. *D. pulcherrima*.

Peduncles 4-8 lin. long, thick and nodding; styles 10; petioles up to ½ in. long, *D. aurea*.

Peduncles very long and slender; styles 6; petioles only 2 to 1 lin. long, ..... *D. pilosa*.

O O Flowers small (petals less than an in. long).

Peduncles 1 or 2-bracted, like the calyx densely tomentose; styles 5-7, ... *D. parviflora*.

\*\* Calyx and peduncles perfectly smooth or pruinous. Flowers small.

Peduncles bracted, ..... *D. scabrella*.

Peduncles without bracts, ..... *D. pentagyna*.

1. *D. INDICA*, L. sp. pl. 745; Hf. Ind. Fl. I. 200. (*D. speciosa*, Thbg. in Linn. Trans. I. 200; Wight Jc. t. 823; Roxb. Fl. Ind. II. 650; Bot. Mag. t. 5016; *D. elongata*, Miq. Suppl. Fl. Sumatr ...) .

HAB. Not unfrequent along choungs in moister upper mixed forests of the Pegu Yomah on sandstone; also in Martaban, Tenasserim and Chittagong, on metamorphic rocks. Fl. Fr. Febr. March.

2. *D. AUREA*, Sm. Exot. Bot. II. t. 92 93?; Ham. in Linn. Trans. xv. 101. *D. ornata*, Wall. Pl. As. rar. I, 20, t. 23; *D. speciosa*, Griff. Not. Dicot. 703, t. 649, f. 3.).

HAB. Frequent in the drier hill-forests of Martaban and entering the pine-forests up to 4000' ft. elevation; also in tropical forests of Tenasserim, up to 3000 ft. elevation. Fl. March, Apr.

3. *D. PULCHERRIMA*, Kurz in Journ. As. Soc. Bengal, 1871, 46; Hf. Ind. Fl. I. 37.

HAB. Common in the open forests, chiefly in the Eng-forests of Pegu and Martaban. Fl. H. S.; Fr. Begin of R. S.

4. *D. PARVIFLORA*, Griff. Not. Diot. 70; Hf. Ind. Fl. I. 38.

HAB. Frequent in the mixed forests of Pegu, Martaban and Tenasserim Fl. H. S.; Fr. Begin of R. S.

5. *D. PILOSA*, Roxb. Fl. Ind. II. 652, non Ham.; Kurz in Journ. As. Soc. Bengal 1872, 292.

HAB. Frequent in the upper mixed forests of the Andamans. Fl. H. S.; Fr. Begin of R. S.

6. *D. SCABELLA*, Roxb. Fl. Ind. II. 643; Wall. Pl. as. rar. I. 20, t. 22; Hf. Ind. Fl. I. 38.

HAB. Chittagong (Roxb.). Fl. H. S., Fr. Begin of R. S.

7. *D. PENTAGYNA*, Roxb. Corom. Pl. I, t. 20, and Fl. Ind. II. 652; Hf. Ind. Fl. I. 38. Var.  $\beta$ . *AUGUSTA* (*D. augusta*, Roxb. Fl. Ind. II. 652; *D. floribunda*, Hf. and Th. Fl. Ind. I. 71).

HAB. Frequent in the mixed forests, especially the upper ones of Pegu and Martaban down to Tenasserim. Fl. H. S.; Fr. Begin of R. S.

The smaller leaved and longer petioled var. *a.*, frequent in India, seems not to occur in Burmah.

### MAGNOLIACEÆ.

#### *Conspectus of genera.*

I. *WINTEREÆ*. Stipules none. Perianth double. Carpels in a single whorl.

1. *ILLICIUM*. Only genus. Trees or shrubs.

II. *MAGNOLIEÆ*. Stipules conspicuous, convolute and sheathing the young foliage, deciduous.

\* Ovary sessile.

2. *TALAUMA*. Carpels of fruit indehiscent, deciduous.

3. *MAGNOLIA*. Carpels of fruit dorsally dehiscing. Ovules 2.

4. *MANGLIETIA*. Carpels of fruit dorsally dehiscing. Ovules 6 or more.

\*\* Ovary stalked.

5. *MICHELIA*. Only genus.

### *Illicium*. L.

1. *J. MAJUS*, Hf. et Th. Ind. Fl. I. 40.

HAB. Tenasserim, Thounggyeen range, at 5500 ft. elevation (Lobb).

### *Talauma*, Juss.

#### *Conspectus of species.*

Leaves glabrous; fruits 4-6 in. long, ..... *T. liliifera*.

Leaves usually pilose or downy beneath; fruits 2 in. long, ..... *T. Candollei*.

1. *T. LILIIFERA*, (*Liriodendron liliiflora*, Roxb. Fl. Ind. II. 654; *T. Rabaniana*, Hf. and Th. Fl. Ind. I. 75, and Ind. Fl. I, 40).

HAB. Tenasserim, Mergui (Griff.). (According to Hf. and Th. first ed. of Fl. Ind.)

2. *T. CANDOLLEI*, Bl. Verh. Bat. Genotsch. I. 147; Miq. Fl. Ind. Bat. I/2 14. *T. mutabilis*, Bl. Fl. Jav. Magnol. 35. t. 10-12 B.; Hf. Ind. Fl. I. 40).

HAB. Tenasserim, Moulmein (Lobb).

### *Magnolia*, L.

1. *M. SPHENOCARPA*, Roxb. Corom. Pl III. t. 266; Hf. Ind. Fl. I.

41. (*Liriodendron grandiflorum*, Roxb. Fl. Ind. II. 65).

HAB. Chittagong; Pegu (Brandis).

### *Manglietia*, Bl.

1. *M. INSIGNIS*, Bl. Fl. Jav. Magnol. 23; Hf. Ind. Fl. I. 42. (*Magnolia insignis*, Wall. Tent. Fl. Nap. t. 1, and Pl. as. rar. II. t. 182).

HAB. Pegu (Brandis).

*Michelia*, L.

1. M. CHAMPACA, L. sp. pl. 756; Roxb. Fl. Ind. II. 656; Bl. Fl. Jav. Magn. 9, t. 1; Griff. Not. Dicot. 715; Hf. Ind. Fl. I, 42. (*Michelia aurantiaca*, Wall. Pl. as. rar. II. t. 147).

HAB. Rather rare in the tropical forests of Martaban and Tenasserim also Pegu, above Rangoon (on laterite); Ava, Bhamo; Prome hills (Wall.). Fl. Fr. R. S.

*ANONACEÆ.**Conspectus of genera.*

- I. *UVARIEÆ*. Petals in 2 rows, one or both rows imbricate in the bud. Stamens many, closely packed.

1. BOCAGEA. Sepals small, imbricated in the bud. Torus flat. Carpels 3 to 6.

2. UVARIA. Sepals valvate. Flowers bisexual; ovules 1 or 2 or many; torus almost flat. Climbers.

- II. *UNONIEÆ*. Petals valvate in the bud, more or less spreading, somewhat unequal, or those of the inner row small or wanting, not or little narrowed at base.

\* Petals spreading from the base.

✗ Ovules many, ventral.

3. ALPHONSEA. Petals nearly equal. Stamens 6 or more, loosely imbricated, with dorsal anthers.

4. CANANGA. Petals open, elongate. Stamens indefinite, closely packed, ovate-acute at the top. Ovules in 2 rows.

5. CYATHOSTEMMA. Petals broad-ovate. Stamens indefinite, the connective obliquely incurved. Ovules many, in 2 rows.

6. UNONA. Petals open, usually elongated. Stamens indefinite closely packed, capitate or truncate at the top. Ovules in a single row. Ripe carpels usually moniliiform.

✗ ✗ Ovules 1 or 2, erect.

7. POLYALTHIA. Petals opened, rather thick. Berries indehiscent.

8. ANAXAGOREA. Petals opened, rather thick. Carpels follicle-like, dehiscent.

- \*\* Petals enclosing the sexual organs with a concave or connivent base, free towards the summit.

9. CYATHOCALYX. Calyx 3-toothed. Petals connivent at base. Carpels solitary. Ovules many.

- III. *XYLOPIEÆ*. Petals valvate, connivent or hardly open, those of the outer row usually thick, not narrowed at base, and enclosing the 3 inner, smaller or minute ones, or the latter wanting.

\* Ovules solitary.

10. ANONA. Outer petals concave, often broad. Berries united into a many-celled syncarp.

\*\* Ovules 2 or more.

11. XYLOPIA. Petals triquetrous, connivent, narrowed. Anthers truncate. Torus hollow. Stigmas elongate.

12. AETABOTRYS. Petals terete, triquetrous or flat, concave at the base and enclosing the sexual organs, the tips spreading. Anthers truncate. Torus hollow. Peduncles usually hooked.

*Trib. IV. MITREPHOREÆ.* Petals valvate, the outer ones open, the inner ones erect, connivent or connate at their tips and often claw-like narrowed at the base.

\* Petals of the inner row shorter or equally long.

✗ Petals not narrowed at the base, or the claw-like base broad.

13. *OXYMITRA*. Inner petals connivent, not or almost not narrowed at base. Ovules 2, erect. Seeds not angular.

14. *GONIOTHALAMUS*. Inner petals connivent, narrowed in a broad claw. Ovules 2, erect.

15. *MELODORUM*. Petals thick coriaceous, the inner ones shorter, triquetrous at summit and hollowed at base on the inner side.

✗✗ Petals narrowed into curved not angular free slender claws, the laminae cohering in a sort of mitre.

16. *MITREPHORA*. Stamens numerous. Ovules many, in 2 rows. Flowers usually rather conspicuous, sometimes dioecious.

17. *OPHEA*. Stamens definite, 6, 9, or 12. Ovules 2-4. Flowers usually very small.

\* \* Sepals and the 3 outer petals usually conform or nearly so, minute, resembling a calyx. Inner petals large, erect-connivent, often saccate or concave at base.

18. *PHEANTHUS*. Inner petals flat, rather thick. Ovules 1 or 2. Anther-cells concealed by the overlapping connectives.

19. *MILIUSA*. Inner petals flat. Ovules 2 or more. Anther-cells not concealed.

### Bocagea, St. Hil.

1. *B. ELLIPTICA*, Hf. and Th. in Ind. Fl. I. 92.

HAB. Tenasserim, Tavoy (Wall.).

### Uvaria, L.

#### Conspectus of species.

*Subg. 1. Ellipeia*. Ovules solitary or by pairs. Usually erect shrubs.

A little erect shrub; berries elliptical or nearly so, very small, glabrous, sessile, *U. ferruginea*.

*Subg. 2. Eu-uvaria*. Ovules usually numerous, rarely few. Climbing shrubs.

§ Flowers large or middling sized, the connective terminating in a large almost leafy appendage.

O Carpels on long stalks.

Flowers solitary; carpels and all other parts shortly tomentose, ..... *U. purpurea*.

All parts hirsute; usually solitary; carpels tawny hirsute, ..... *U. hirsuta*.

Flowers by 2 or 3 on a peduncle; carpels tubercled and stellately hispid-tomentose; all parts puberulous, ..... *U. ptychocalyx*.

O O Carpels sessile or very shortly stalked.

Peduncles 3-to 6-flowered; carpels glabrous, ..... *U. macrophylla*.

Peduncles 1-to 2-flowered; carpels tomentose, ..... *U. bracteata*.

§ § Flowers minute. Stamens truncate, the connective hardly produced beyond the anther-cells.

Berries on long slender stalks, glabrous, ..... *U. micrantha*. \*

1. *U. FERRUGINEA*, Ham. ap. Hf. and Th. Fl. Ind. I. 96. (*Ellipeia ferruginea*, Hf. and Th. Ind. Fl. I, 52.)

HAB. Not uncommon in the Eng forests of Prome and Pegu, on laterite; also Tenasserim, Thoungyeen (Dr. Brandis). Fl. Apr.; Fr. Jan. Febr.

In this species the ovules vary in number (1 or 2). Hooker gives *Uv. dulcis*, Dun., as a Burmese plant, but I suspect it is referable to this species.

2. U. PURPUREA, Bl. Bydr. 11 and Fl. Jav. Anon. 13, t. 1 and 13 f. A; Hf. Ind. Fl. I. 47. (*Uvaria grandiflora* Roxb. Fl. Ind. II. 665, Wall. Pl. As. rar. III. t. 121).

HAB. Not uncommon in the tropical forests of Martaban; also Tenasserim.

3. U. HIRSUTA, Jack Mal. Misc.; Bl. Fl. Jav. Anon. 22, t. 5; Hf. Ind. Fl. I. 48. (*U. pilosa*, Roxb. Fl. Ind. II. 665; *U. trichomalla*, Bl. l. c. 42, t. 18).

HAB. Rare in the tropical forests of the E. slopes of the Pegu Yoma (Khaboung, Choungmenah valley).

I have only leaf-branches, but I can hardly be mistaken in identifying my specimens with Jack's Malayan species.

4. U. PTYCHOCALYX, Miq. Ann. Mus. Lugd. Bat. II. 4; Hf. Ind. Fl. I. 49.

HAB. Not uncommon in tropical forests of the southern slopes of the Pegu Yomah; Tenasserim, Moulmein (Theobald). Fr. Dec. Jan.

5. U. MACROPHYLLA, Roxb. Fl. Ind. II. 663; Wall. Pl. As. rar. II. t. 122; Hf. Ind. Fl. I. 49 pp.; Bedd. Icon. Pl. Ind. or. t. 81.

HAB. Frequent in the mixed forests all over Burma from Chittagong and Ava down to Tenasserim. Fl. R. S.; Fr. Nov. Dec.

6. U. BRACTEATA, Roxb. Fl. Ind. II. 660; Hf. Ind. Fl. I. 49.

HAB. Tenasserim (Wall.) Fl. May; Fr. Sept.

7. U. MICRANTHA, Hf. and Th. Fl. Ind. I. 103 and Ind. Fl. I. 51. (*U. Sumatrana*, Kurz And. Rep. App. B. 1; Hf. Ind. Fl. I. 51).

HAB. Rather frequent in tropical forests of the Andamans; also Pegu (Brandis) and Upper-Tenasserim (Falconer). Fl. June.

#### Alphonsea, Hf. and Th.

##### *Conspectus of species.*

The stalk nearly as long as the carpel,...	...	...	...	<i>A. ventricosa.</i>
The stalk of the carpels very short, ...	...	...	...	<i>A. lutea.</i>

1. A. VENTRICOSA, Hf. and Th. Fl. Ind. I. 152 and Ind. Fl. I. 89. (\**Uvaria ventricosa*, Roxb. Fl. Ind. II. 658).

HAB. In the forests of Chittagong; Andamans.

2. A. LUTEA, Hf. and Th. Fl. Ind. I. 153, and Ind. Fl. I. 89 Bedd.

Jc. Pl. Ind. or. t. 91. (*Uvaria lutea*, Roxb. Corom. Pl. I. t. 36 and Fl. Ind. II. 666).

HAB. Ava, Segain (Wall.) ; Pegu (teste Hf. and Th.).

#### Cananga, Rumph.

1. C. ODORATA, Hf. and Th. Fl. Ind. I. 130 and Ind. Fl. I. 56.

(*Uvaria odorata*, Lam. Ill. t. 495, f. 1; Roxb. Fl. Ind. II. 661; Griff. Not. Dicot. 712; *Uvaria axillaris*, Roxb. l. c. 667).

HAB. Ava (Wall. cult.?) ; Tenasserim, apparently frequent.

#### Cyathostemma, Griff.

1. C. VIRIDIFLORUM, Griff. Not. Dicot. 707, Ic. t. 650; Hf. Ind. Fl. I. 57.

HAB. South Andaman, in the tropical forests north of Port Mouat.

This species is inserted here on the authority of Hf. and Th.

#### Unona, L.

##### *Conspectus of species.*

*Sect. 1. Desmos.* Petals 6. Berries necklace-like constricted between the seeds.

✗ Petals glabrous.

Leaves glabrous, pale coloured beneath; peduncles only  $\frac{1}{2}$  to  $1\frac{1}{2}$  in. long, axillary and occasionally terminal, ... ... ... ... ... ... ... ... ... ... ... ... ... *U. Dunalii*.

✗ ✗ Petals appressed pubescent or puberulous.

Leaves glabrous beneath; peduncle 1-2 in. long; petals 2 in. by 1 in. ... *U. discolor*.

Leaves glaucous and usually pubescent beneath; peduncle 4-8 in. long; petals  $2\frac{1}{2}$  by 1 in., ... ... ... ... ... ... ... ... ... ... ... ... ... *U. desmos*.

Leaves while young greyish tomentose; peduncle 4 to 8 in. long; petals  $1\frac{1}{4}$  in. long. oblong, ... ... ... ... ... ... ... ... ... ... ... ... ... *U. latifolia*.

Leaves pale coloured and pubescent beneath along the nerves; peduncle  $\frac{1}{2}$ -1 in. long; petals 2 to 3 in. long, very narrow linear, ... ... ... ... ... ... ... ... ... ... ... ... *U. stenopetala*.

*Sect. 2. Dasymaschalon.* Outer petals 3, large, the 3 inner ones quite suppressed.

Petioles rather long; petals 4 to 6 in. long, ... ... ... ... ... ... *U. longiflora*.

Leaves almost sessile, cordate at base; petals nearly 3 in. long, ... ... *U. dasymaschala*.

1. U. DUNALII, Wall. ap. Hf. and Th. Fl. Ind. I. 131, and Ind. Fl. I. 53.

HAB. Forests of Chittagong on the Seetakoond hill (Hf. and Th.).

2. U. DISCOLOR, Vahl. Symb. II. 63, t. 36; Roxb. Fl. Ind. II. 669; Hf. Ind. Fl. I. 59; Bedd. Icon. Pl. Ind. or. t. 51.

Var.  $\alpha$ . PUBIFLORA, Hf. and Th. l. c.

Var.  $\beta$ . PUBESCENS, Hf. and Th. l. c.

Var.  $\gamma$ . LATIFOLIA, Hf. and Th. l. c.

HAB. Tropical forests and moister upper mixed forests from Chittagong and Ava down to Tenasserim. Fr. Jan.

3. U. DESMOS, Dun. Anon. 112; Hf. Ind. Fl. I. 52.

HAB. Frequent in tropical and low forests all over Pegu and Martaban; also Tenasserim. Fl. June; Fr. October.

It is difficult to distinguish some states of this species from the former, for the peduncles vary very much in length, as do also the petals with regard to size and shape.

4. U. LATIFOLIA, Hf. and Th. Ind. Fl. I. 60.

HAB. Martaban, in dry hill-forests on limestone rocks along the Ngachoung of the Salween (Brandis). Fl. May.

5. U. STENOPETALA, Hf. and Th. Fl. Ind. I. 163, and Ind. Fl. I. 60.

HAB. Tenasserim, Moulmein (Lobb).

6. U. LONGIFLORA, Roxb. Fl. Ind. II. 668; Hf. Ind. Fl. I. 61.

HAB. Chittagong.

7. U. DASYMASCHALA, Bl. Fl. Jav. Avon. 55. t. 27; Hf. and Th. Fl. Ind. I. 135, and Ind. Fl. I. 61. (*Pelticalyx argentea*, Griff. Not. Dicot. 706?).

Var.  $\alpha$ . BLUMEI, Hf. and Th. I. e.

Var.  $\beta$ . WALLICHII, Hf. and Th. I. e. (*U. coelophloea*, Scheff. Obs. phyt. 6?).

HAB. Frequent in the tropical forests of Martaban and Tenasserim to the Andamans; also Ava. Fl. Febr. to May.

### Polyalthia, Bl.

#### *Conspectus of species.*

*Sect. 1. Monoon*, Miq. Fl. hermaphrodite. Petals flat. Ovules solitary, erect.

§ Flowers usually rather large; carpels oblong or elongate and cylindrical.

✗ Petals linear to linear-lanceolate or spatulate-linear.

Leaves glabrous, one-coloured, apiculate or shortly acuminate; carpels obversely ovoid,

... *P. lateriflora*.

Leaves glabrous, glaucous or whitish beneath, shortly acuminate,

... *P. Sumatrana*,

✗ ✗ Petals ovate to ovate-lanceolate and elliptical.

Carpels almost globular, glabrous?, leaves glabrous, ... ... ... *P. nitida*.

Carpels velvety; leaves along the nerves beneath puberulous, ... ... *P. membranacea*.

Carpels elongate-oblong, glabrous; leaves along the nerves pubescent, ... *P. Jenkinsii*.

§ § Flowers small, on slender pedicels; carpels globular, pea-shaped.

Leaves along the nerves beneath pubescent, blunt or nearly so ... ... *P. suberosa*.

Leaves pubescent beneath, acuminate, ... ... ... *P. cerasoides*.

*Sect. 2. Eupolyalthia*. Flowers hermaphrodite. Petals flat. Ovules 2, superposed, ascending.

Flowers small, sessile or nearly so, sometimes clustered, ... ... ... *P. dubia*.

1. P. LATERIFLORA, (*Guatteria lateriflora*, Bl. Bydr. 20 and Fl. Jav.

Anon. 100, t. 50 and 52 D.; *Guatteria spathulata*, T. et B. in Tydschr. Nat. Ver. Ned. Ind. XXIV, petalis latioribus; *P. simiarum*, Bth. and Hf. Ind. Fl. I. 63.)

HAB. Not uncommon in the tropical forests of the eastern slopes of the Pegu Yomah and Martaban; also Tenasserim. Fr. May, June.

2. P. SUMATRANA (*Guatteria Sumatrana*, Miq. Suppl. Fl. Sumatr. 380; *Monoon Sumatranum*, Miq. in Ann. Mus. Lugd. Bat II. 19).

HAB. Tenasserim (or Andamans?) (Helf.).

3. P. NITIDA, Bth. and Hf. Ind. Fl. I. 64. (*Guatteria nitida*, A. DC. Mem. Anon. 41.

HAB. Tenasserim, Tavoy (Wall.).

*Guatteria membranacea*, A. DC. Mem. Anon. 41. Hf. Ind. Fl. I. 68. is hardly different from the above.

4. P. JENKINSII, Bth. and Hf. Ind. Fl. I. 64. (*Guatteria Jenkinsii*, Hf. and Th. Fl. Ind. I. 141; *P. Andamanica*, Kurz and And. Rep. 2 ed. 29).

HAB. Frequent in the tropical forests of South Andaman and the adjacent islands. Fl. begin of R. S.

5. P. SUBEROSA, Bth and Hf. Ind. Fl. I. 65; Bedd. Icon. Pl. Ind. or. t. 56. (*Uvaria suberosa*, Roxb. Corom. Pl. I. t. 34 and Fl. Ind. II. 667).

HAB. Tenasserim. Fr. Febr.

6. P. CERASOIDES, Bth. and Hf. Ind. Fl. I. 63. (*Uvaria cerasoides* Roxb. Corom. Pl. I. t. 33, and Fl. Ind. II. 666; *Guatteria cerasoides*, Dun. Mem. Anon. 28; *P. bifaria*, Bth. and Hf. Ind. Fl. I. 62).

HAB. Prome (Wall.) Fr. Sept. Oct.

Wallich's specimens in HBC. are in fruit, and, therefore, it is very improbable that the flowers (which appear during H. S.) should belong to the same specimens in Kew Herb. referred to *P. bifaria*.

7. P. ? DUBIA, Kurz in And. Rep. 2nd ed. 29 (*P. macrophylla*, Hf. and Th. Ind. Fl. I. 66, excl. syn.) var.  $\alpha$  GLABRIUSCULA, petals broader, leaves and branchlets glabrescent, var.  $\beta$ . FALCONERI, branchlets and leaves beneath pubescent, petals less imbricate in bud.

HAB. Var.  $\alpha$ . Frequent in the tropical forests on the Andamans; var.  $\beta$ . Moulmein (Falc. 545). Fl. May, June.

I have only male flowers, and the imbrication of the petals (especially in the Andaman plant) indicates a different genus. Hf. and Th. identify the plant with Blume's *Guatteria macrophylla* (= *Trivalvaria macrophylla*, Miq., *Guatteria brevipetala*, Miq.) which resembles especially the Andaman plant so much that I confounded it with it in my Andaman Report. This has, however, the inner petals thick and fleshy, narrowed at base and the broad triangular blades (see Bl. Fl. Jav. Anon. t. 52. B. f. 2,) connivent somewhat after the fashion of *Mitrepheora*.

#### Doubtful species.

1. P. COSTATA, Hf. and Th. Ind. Fl. I. 67.

HAB. Tenasserim, along the Attaran river (Wall.)

Hf. and Th. refer this to the genus *Trivalvaria*, Miq.

**Anaxagorea, St. Hil.**

1. A. LUZONENSIS, A. Gray in Bot. U. S. Expl. Exp. 27; Hf. Ind. Fl. I. 68. (*A. Zeylanica*, Hf. and Th. Fl. Ind. I. 144; Bedd. Icon. Pl. Ind. or. t. 46.)

HAB. Not unfrequent in the tropical forests of Martaban and the southern slopes of the Pegu Yomah; also on the Andamans. Fl. May, June; Fr. Aug.

**Popowia, Endl.**

1. P. HELFERI, Hf. and Th. Ind. Fl. I. 69.

HAB. Tenasserim, King's island (Helfer).

**Cyathocalyx, Champ.**

1. C. MARTABANICUS, Hf. and Th. Ind. Fl. I. 53,

HAB. Not uncommon in the tropical forests of Martaban down to Tenasserim, rare in those of the eastern and southern slopes of the Pegu Yomah. Fr. March, Apr.

**Anona, L.***Conspectus of species.*

\* Fruits areolate.

Leaves usually blunt; inner petals minute or almost none; fruit with prominent convex areoles, ... ... ... ... ... ... *A. squamosa*.

Leaves acuminate, larger; areoles of fruit not or hardly projecting, .. *A. reticulata*.  
\* \* Fruits very large, muricate.

All parts glabrous. ... ... ... ... ... .. *A. muricata*.

1. A. SQUAMOSA, L. sp. pl. 757; Roxb. Fl. Ind. II. 657; Bot. Mag. t. 3095; Bl. Fl. Jav. Anon. 107. t. 53 B.; Hf. Ind. Fl. I. 78.

HAB. Cultivated all over Burmah, more especially and on a large scale in the Prome district. Fl. March.

2. A. RETICULATA, L. sp. pl. 757; Roxb. Fl. Ind. II. 657; Bot. Mag. t. 2911; Hf. Ind. Fl. I. 78.

HAB. Not much cultivated in Burmese gardens.

3. A. MURICATA, L. sp. pl. 756; Miq. Fl. Ind. Bat. I-2. 34.

HAB. Cultivated in gardens of Tenasserim, especially the southern parts.

**Artobotrys, R. Br.***Conspectus of species.*

§ Blade of petals flattened.

✗ Petals oblong-lanceolate, usually narrowed at base, with the borders reflexed.

O Flowers arising from hooked peduncles.

Young parts rusty tomentose; leaves firmly coriaceous, glabrous; petals densely tawny tomentose ... ... ... ... ... .. *A. crassifolius*

Quite glabrous; leaves thin coriaceous; petals glabrous or puberulous...*A. odoratissimus*.

O O Flowers arising directly from the lateral branchlets, peduncle reduced or only indicated.

Small erect shrub, adult parts all glabrous, ... ... ... *A. Kurzii*.

× × Petals narrow, linear, elongate, ... ... ... *A. speciosus*.

§ § Petal-blade terete or triquetrous, fleshy, subulate or linear.

Petals triquetrous; branchlets and leaves beneath pubescent ... ... *A. Birmanicus*.

Petals terete; all parts glabrous .. ... ... *A. suaveolens*.

1. *A. CRASSIFOLIUS*, Hf. and Th. Ind. Fl. I. 54.

HAB. Martaban (Dr. Brandis).

2. *A. ODORATISSIMUS*, R. Br. in Bot. Reg. t. 423; Hf. Ind. Fl. I. 54. (*A. hamatus*, Bl. Fl. Jav. Anon. 60, t. 29 and 31, C; *Uvaria odoratissima* et *U. uncata*, Roxb. Fl. Ind. II. 666; *A. Blumei*, Hf. and Th. Fl. Ind. I. 128; *A. intermedius*, Hassk. Pl. Jav. rar. 173).

HAB. Tenasserim, banks of rivers, along the Attaran etc.; Ava, near Mandalay, probably cultivated. (Dr. J. Anderson.)

3. *A. KURZII*, Hf. and Th. Ind. Fl. I. 54.

HAB. Not unfrequent in the Eng forests of Pegu and Martaban, on laterite. Fl. Apr.

4. *A. SPECIOSUS*, Kurz in And. Rep. 1 ed. App. B. 1; Hf. Ind. Fl. I. 55.

HAB. In the tropical forests along Middle Straits, South Andaman. Fl. May.

5. *A. BURMANICUS*, A. DC. Mem. Anon. 36; Hf. Ind. Fl. I. 55. (*Rhopalopetalum uniflorum*, Griff. Not. Dicot. 717).

HAB. Not unfrequent in tropical forests of the eastern slopes of the Pegu Yomah; Tenasserim from Moulmein to Mergui; also Ava, on Taong dong (Wall.) Fl. Nov.; Fr. Febr.

6. *A. SUAVEOLENS*, Bl. Fl. Jav. Anon. 62, t. 30 and 31, D.; Hf. Ind. Fl. I. 55. (*Rhopalopetalum sp.* Griff. Not. Dicot. 716).

HAB. Chittagong (Hf. and Th.), Tenasserim, Mergui (Griff.).

### *Oxymitra*, Bl.

#### *Conspectus of species.*

\* Sepals short, coriaceous, 2 to 3 lin. long.

Petals from a broad base narrowly linear, nearly 2 in. long, slightly pubescent *O. stenopetala*.

Petals oblong-lanceolate, blunt, very thick, tawny puberulous, ... *O. MacClellandii*.

Incompletely known. ... ... ... ... *O. unonæfolia*.

\* \* Sepals as in *Goniothalamus*, membranous and nerved, large about 7 to 8 lin. long.

Petals oblong-lanceolate, about 1½ in. long, acute, tawny pubescent, ... *O. fornicatea*.

1. *O. STENOPETALA*, Hf. and Th. Ind. Fl. I. 71.

HAB. Tenasserim, Moulmein and Thoungyeen (Falc., Brandis). Fl. Apr.

2. *O. MACCLELLANDII*, Hf. and Th. Ind. Fl. I. 70.

HAB. Not unfrequent in the tropical and low forest of the southern slopes of the Pegu Yomah, chiefly on permeable laterite. Fl. May to June.

3. O. FORNICATA, Hf. and Th. Fl. Ind. I. 146 and Ind. Fl. I. 71. (*Uvaria fornicata*, Roxb. Fl. Ind. II. 662).

HAB. Not unfrequent in the tropical forests of South Andaman ; Tenasserim, Mergui (Griff.). Fl. May.

*Doubtful species.*

1. O. UNONÆFOLIA, Hf. and Th. Fl. Ind. I. 146 and Ind. Fl. I. 71.  
HAB. Tenasserim, Tavoy (Wallich).

**Goniothalamus, Bl.**

*Conspectus of species.*

Flowers about 9 lin. long. ...	...	...	...	...	...	<i>G. sesquipedalis.</i>
Flowers about 2 in. long ...	...	...	...	...	...	<i>G. Griffithii.</i>

1. G. SESQUIPEDALIS, Hf. and Th. Fl. Ind. I. 108 and Ind. Fl. I. 73. (*Guatteria sesquipedalis*, Wall. Pl. As. rar. III. t. 266).

HAB. Tenasserim (teste Hf. and Th.).

2. G. GRIFFITHII, Hf. and Th. Fl. Ind. I. 110 and Ind. Fl. I. 73.

HAB. Rather rare in the tropical forests of the eastern slopes of the Pegu Yomah (headwaters of Swachoung) ; Martaban (Brandis) ; Tenasserim, Mergui (Griff.).

**Melodorum, Dun.**

*Conspectus of species.*

Sect. 1. *Pyramidanthe*, Miq. Calyx cyathiform, 3-lobed. Flowers large, 2-5 in. long.

Flowers 4-5 in. long, white ; leaves membranous, quite glabrous, ... *M. macranthum.*

Flowers 2-3 in. long, yellow ; leaves beneath densely puberulous, glabrescent coriaceous, ... ... ... ... ... *M. prismaticum.*

Sect. 2. *Eu-Melodorum*. Calyx deeply 3-cleft ; flowers small, 1 in. or less long.

Flowers about an in. long or a little longer ; carpels simply tomentose, ... *M. rubiginosum.*

Flowers about  $\frac{1}{2}$  in. long, ... ... ... ... *M. Griffithii.*

Flowers nearly  $\frac{3}{4}$  in. long ; carpels densely verrucose, pubescent, ... *M. verrucosum.*

Flowers 1 m. long ; carpels almost glabrous, .. ... ... *M. bicolor.*

1. M. MACRANTHUM Kurz in Journ. As. Soc. Beng., 1872, 291. (*Unona macrantha*, Kurz in And. Rep. ed. 1. App. B. 1; *Pyramidanthe macrantha*, Kurz, l. c., ed. 2, p. 29).

HAB. Rather rare in the tropical forests about Port Mouat, South Andaman. Fl. June.

The large flowers resemble much those of *Unona longiflora*, the leaves those of *Goniothalamus cardiopetalus*.

2. M. RUBIGINOSUM, Hf. and Th. Fl. Ind. I. 116 and Ind. Fl. I. 79.

HAB. Rare in the tropical forests of Martaban (E. of Toungoo) ; Tenasserim ; Chittagong.

3. M. GRIFFITHII, Hf. and Th. Fl. Ind. I. 120 and Ind. Fl. I. 80.  
(*Fissistigma scandens*, Griff. Not. Dicot. 706).

HAB. Tenasserim, Mergui (Griff.) Fl. Decb.

4. M. VERRUCOSUM, Hf. and Th. Fl. Ind. I. 119 and Ind. Fl. I. 80.

HAB. Ava, Khakyen hills, Ponsee (J. And.). Fl. Apr.

5. M. BICOLOR, Hf. and Th. Fl. Ind. I. 119 and Ind. Fl. I. 80.  
(*Uvaria bicolor*, Roxb. Fl. Ind. II. 662).

HAB. Tropical forests of the western slopes of Pegu, along the headwaters of the Panyo-gyee choung (feeder of Toungnyo choung); Ava (accord. Hf. and Th.).

### Mitrephora, Bl.

#### *Conspectus of species.*

\* Flowers dioecious, small (about 3 lin. long).

Leaves (except nerves beneath) glabrous; inflorescence and petals tomentose, *M. reticulata*.

\* \* Flowers conspicuous, 1 to 2 in. in diameter.

Leaves softly tomentose beneath; flowers 2 in. across, on short and thick pedicels, ... ... ... ... ... ... ... *M. tomentosa*.

Leaves minutely puberulous or almost glabrous, chartaceous; flowers about an in. across, on long slender pedicels, ... ... ... ... ... *M. vandæflora*.

1. M. RETICULATA, Hf. and Th. Ind. Fl. I. 77. (*U. reticulata*, Bl. Fl. Jav. Anon. 50. t. 24; *M. aperta*, T. et B. in Nat. Tydsch. Ned. Ind.).

HAB. Tenasserim (Helf.).

2. M. TOMENTOSA, Hf. and Th. Fl. Ind. I. 113, and Ind. Fl. I. 76.

HAB. Chittagong.

3. M. VANDÆFLORA, Kurz, MS.

HAB. Not unfrequent in the tropical forests of the Pegu Yomah and Martaban. Fl. Febr.—March.

This should be compared with *M. Maingayi*, Hf. and Th., a species which I cannot recognize from the description alone. There are two varieties differing in the texture and pubescence of the leaves, but the flowers are alike in both.

### Orophea, Bl.

#### *Conspectus of species.*

\* Flowers very small (hardly 2 to 3 lin. in diameter).

Leaves glabrous; sepals minutely hispid, ciliate; carpels globular, stalked, *O. polycarpa*.

Leaves along the nerves pubescent; sepals densely pubescent; carpels elongated, oblong, sessile, ... ... ... ... ... ... ... *O. hexandra*.

\* \* Flowers rather large (about an in. in diameter).

Leaves rather large, pubescent beneath, ... ... ... ... ... *O. Brandisii*.

1. O. POLYCARPA, A. DC. Mém. Soc. Gen. V. 39; Hf. Ind. Fl. I. 91.  
(*Anonacea* Griff. Dicot. Ic. t. 654?, *Melodorum monospermum*, Kurz in And. Rep. App. B. p. 1.)

HAB. Rather frequent in the tropical forests of the Andamans; Martaban, Meepay (Brandis); Tenasserim, along the Salween (Wll.). Fl. March; Fr. June.

2. O. HEXANDRA, Bl. Bydr. 18; Miq. Fl. Ind. Bat. I-2, 29. (*Bocagea hexandra*, Bl. Fl. Jav. Anon. 13, t. 40; *O. acuminata*, A. DC. Mém. Soc. Gen. V. 39; Hf. Ind. Fl. I. 91).

HAB. Tenasserim, Tavoy (Wall.).

3. O. BRANDISHII, Hf. and Th. Ind. Fl. I. 92.

HAB. Not uncommon along choungs in the tropical forests of Martaban (Toukyeghat); Tenasserim, Thounggyeen (Brandis). Fl. Apr. May.

#### *Miliusa*, Lesch.

##### *Conspectus of species.*

\* Pedicels 2 to 4 in. long, without or with a rudimentary bractlet.

Tomentose; berries tomentose, shortly stalked, ... ... ... *M. velutina*.  
\* \* Pedicels short, only 6 to 10 lin. long.

Branchlets and leaves beneath rusty pubescent; flowers about  $\frac{1}{2}$  in. long; pedicels  
bracteoled, ... ... ... ... *M. Roxburghiana*.

Leaves glabrous; flowers nearly an in. long; pedicels bracteoled, ... *M. tristis*.

Almost glabrous; pedicels without bractlet, ... ... ... *M. sclerocarpa*.

1. *M. VELUTINA*, Hf. and Th. Fl. Ind. I. 151 and Ind. Fl. I. 87; Bedd. Ic. Pl. Ind. or. t. 87. (*Uvaria villosa*, Roxb. Fl. Ind. II. 664).

HAB. In the lower mixed, the low and moist forests, entering also the savannah forests; Ava; common in Pegu, but rare in Martaban, also in Tenasserim. Fl. H. S.; Fr. Begin. of R. S.

2. *M. ROXBURGHIANA*, Hf. and Th. Fl. Ind. I. 150 and Ind. Fl. I. 87. (*Uvaria dioica*, Roxb. Fl. Ind. II. 659; *Hyalostemma Roxburghiana*, Wall. Cat. 6434; Griff. Dicot. Icon. t. 653; *Phæanthus dioicus*, Kurz in Journ. As. Soc. 1870, 62).

HAB. Chittagong; Tenasserim.

3. *M. TRISTIS*, Kurz, MS.

HAB. Ava, Khakyen hills, at Ponsee (Dr. J. Anderson). Fl. March.

4. *M. SCLEROCARPA*, Kurz in Journ. As. Soc. Beng. 1872, 291. (*Saccopetalum sclerocarpum*, Hf. and Th. Ind. Fl. I. 88).

HAB. Not unfrequent in the upper mixed forests of the Martaban hills, E. of Toungloo, at 2000 to 3000 ft. elevation; Tenasserim, Moulmein (Wall.) Fl. March.

The difference between *Phæanthus* and *Miliusa* is restricted to the nature of the connective, a character which in *Uvaria* has met with no consideration.

N. B. NEPHROSTIGMA, sp. Griff. Not. Dicot. 717 from Mergui I cannot identify. Griffith says that the genus is easily recognizable by the sepals and outer petals being conform. Now if “sepala exteriora majora” be a misprint for *minara*, we might compare it with *Miliusa* or *Phæanthus*.

*MENISPERMACEÆ.**Conspectus of genera.*

*Trib. I. TINOSPOREÆ.* Carpels 3, rarely 6. Style-scar almost terminal, rarely ventral or almost basal. Seeds meniscoid or rarely oblong, albuminous. Cotyledons leafy, usually spreading laterally.

\* Petals 6, shorter than the inner sepals. Style-scar almost terminal.

1. *PARABÆNA*. Sepals 6. Filaments connate, the anthers in heads. Seeds meniscoid.

2. *ASPIDOCARYA*. Sepals 12. Filaments connate, the anthers sessile round the peltate end of the column. Seeds oblong.

3. *TINOSPORA*. Sepals 6. Stamens 5; anther-cells lateral, distinct. Seeds meniscoid. Albumen ruminant.

\*\* Petals none.

4. *FIBREAUREA*. Sepals 9. Stamens 6, free. Style-scar almost terminal. Albumen horny.

5. *ANAMIRTA*. Sepals 6, in 2 rows. Filaments connate, anthers sessile at the end of the column. Style-scar almost basal. Albumen ruminant.

*Trib. II. COCCULEÆ*. Flowers 3-merous. Ovaries usually 3. Style-scar almost basal, rarely almost terminal. Seeds horseshoe-shaped. Albumen copious. Embryo slender, the cotyledons linear or only slightly dilated.

✗ Albumen ruminant.

6. *TIILIACORA*. Petals 6, minute. Carpels 6-12.

✗ ✗ Albumen homogeneous.

7. *LIMACIA*. Petals 5-8. Styles short, compressed.

8. *COCCULUS*. Petals 6. Carpels 3-6. Styles subulate, simple or 2-cleft.

*Trib. III. CISSAMPELIDEÆ*. Flowers 3-5-merous. Ovaries usually solitary. Style-scar usually almost basal. Endocarp dorsally muricate or echinate. Seeds horseshoe-shaped. Albumen scanty. Embryo linear, the cotyledons appressed.

9. *STEPHANIA*. Petals 3 to 5, shorter than the sepals, rather thick. Staminal column peltate at summit. Flowers umbellate.

10. *CISSAMPELOS*. Male fl.: sepals 4; petals united in a cup. Female fl.: sepals and petals 1-2, the latter entire 2-cleft or -parted; styles simple. Flowers cymose or racemose.

11. *CYCLEA*. Male fl.: Sepals connate; petals more or less connate. Female fl.: sepals 2, lateral, free; petals none; styles 2-parted. Flowers panicled.

*Trib. IV. PACHYGONEÆ*. Flowers usually 3-merous. Ovaries and carpels usually 3, rarely 9-12. Style-scar almost basal or ventral. Seed curved hooked or inflexed, without albumen. Cotyledons thick and fleshy.

12. *PACHYGONE*. Sepals, petals and stamens, 6 each. Anthers blunt. Styles thick, Drupes reniform.

**Parabæna, Miers.**

1. *P. SAGITTATA*, Miers in Tayl. Ann. ser. 2-VII. 39 and Contr. Bot. III. 57 and 391, t. 98; Hf. Ind. Fl. I. 96.

HAB. Not unfrequent in the tropical forests along the eastern slopes of the Pegu Yomah and Martaban; also Ava and Chittagong. Fl. March, Apr.—Fr. May, June.

## **Aspidocarya, Hf. and Th.**

- I.** A. UVIFERA, Hf. and Th. Fl. Ind. I. 180 and Ind. Fl. I. 95.  
Miers contrib. III. 58. t. 99. var.  $\beta$ , MOLLIS, all parts softly pubescent.  
HAB. Aya, Khakyen hills, Ponsee (J. Anderson). Fl. Apr.

### Tinospora, Miers.

### *Conspectus of species.*

\* Drupes the size of a pea, the putamen tuberculate.

Young parts and the orbicular-ovate blunt leaves beneath tomentose, ... *T. tomentosa*.

Young parts and the cordate-ovate acuminate leaves beneath pubescent, ... *T. Malabarica*.

All parts glabrous, ...      ...      ...      ...      ...      ... *T. crispa*

\* \* Putamen smooth.

All parts glabrous; drupes the size of a pea, ... *T. cordifolia*.

Young leaves and shoots pubescent or tomentose; drupes the size of a cherry, *T. nudiflora*.

1. T. TOMENTOSA, Miers in Tayl. Ann. ser. 2 VII. 38 and Contr. Bot. III. 33; Hf. Ind. Fl. I. 96. (*Menispermum tomentosum*, Roxb. Fl. Ind. III. 813).

HAB. AVA (WALL.)

2. T. MALABARICA, Miers in Tayl. Ann. ser. 2. VII. 38 and Contr. Bot. III. 32; Hf. Ind. Fl. I. 96.

HAB. Chittagong (Hf. and Th.)

3. T. CRISPA, Miers in Tayl. Ann. ser. 2, VII. 38 and Contr. Bot. III. 34 Scheff. Obs. Phyt. III. 71. t. 1. (*Menispermum verrucosum*, Roxb. Fl.; Ind. III. 808).

HAB, Pegu (teste Hf. and Th.); Arracan, Sandoway (teste Miers).

4. *T. CORDIFOLIA*, Miers in Tayl. Ann. ser. 2. VII. 38 and Contr. Bot. III. 31; Hf. Ind. Fl. I. 97; Scheff. Obs. Phyt. III. 71, t. 2. (*Menispermum cordifolium*, Willd. IV. 826; Roxb. Fl. Ind. III. 811? *Cocculus cordifolius* DC, Syst. I. 518; Wight Ic. t. 485-486).

HAB. Not unfrequent in the forests of the Andaman islands; Ava (Wall.) ; Chittagong.

Roxburgh figures the stems of his plant as 5- (or 6 ?) angular, and the angles as produced into membranous waved wings ; it can, therefore, hardly be the same as Miers's.

5. T. NUDIFLORA, Kurz in Journ. As. Soc. Bengal, 1872, 292. (*Cocculius nudiflorus*, Griff. Not. Dicot. 307).

HAB. Rather frequent in the tropical forests of the E. slopes of the Pegu Yomah and Martaban; also Tenasserim.—Fl. March, Apr.; Fr. Begin. of R. S.

Fibraurea. Tour.

1. *F. TINCTORIA*, Lour. Fl. Coch. II. 769; Miers Contr. Bot. III. 41; Hf. Ind. Fl. I. 98; Scheff. Obs. Phyt. III. 73 t. 4.

HAB. Tenasserim, Tavoy (Griff.).

HAB. Not unfrequent in the tropical forests along the eastern slopes of the Pegu Yomah and Martaban down to Tenasserim (Moulmein); also Chittagong.

2. C. LINNÆANUS, (*Menispermum hirsutum* L. sp. pl. 1469 Roxb. Fl. Ind. III. 814; *Menispermum myosotoides*, L. l. c.; *Cocculus villosus*, DC. Syst. I. 525; Hf. and Th. Ind. Fl. I. 101).

HAB. Frequent in hedges, shrubberies, etc. around villages all over Pegu and Prome; also Ava. Fl. Jan. Febr.

3. C. INCANUS, Colebr. in Linn. Trans. XVII. 57; Scheff. Obs. Phyt. III. 76, t. 10. (*Pericampylus incanus*, Miers in Tayl. Ann. ser. 2. VII. 40 and Contr. Bot. III. 118; Hf. and Th. Ind. Fl. I. 102; *Menispermum villosum* Roxb. Fl. Ind. III. 812).

HAB. Frequent in savannahs, mixed and other deciduous forests all over Burmah from Chittagong, Ava, Pegu and Martaban down to Tenasserim, up to 3000 ft. elevation. Fl. March.

### Stephania, Lour.

#### *Conspectus of species.*

Leaves glabrous or pubescent; flowers very shortly pedicelled, in head-like umbellets,  
.. *St. hernandifolia*.

Leaves glabrous; flowers slenderly pedicelled forming loose cymose umbellets, *St. rotunda*.

1. ST. HERNANDIFOLIA, Walp. Rep. I. 96; Hf. and Th. Fl. I. 196 and Ind. Fl. I. 103; Wight Jc. t. 939.

Var.  $\alpha$ . GLABRESCENS, Hf. and Th. l. c.

Var.  $\beta$  DISCOLOR Hf. and Th. l. c. (*Cissampelos hernandifolia*, Willd., Roxb. Fl. Ind. III. 842; *Lissampelos hexandra*, Roxb. l. c. 840).

HAB. Frequent all over Burmah from Ava and Chittagong down to Tenasserim, in savannahs and mixed forests, etc. Fl. March to June; Fr. Apr. June.

2. ST. ROTUNDA, Lour. Fl. Coch. 747; Hf. and Th. Fl. Ind. I. 197 and Ind. Fl. I. 103; Scheff. Obs. Phytol. III. 79, t. 14. (*Cissampelos glabra* Roxb. Fl. Ind. III. 840, Wal-tiedde, Gaertn. Fruct. I. t. 180.).

HAB. Frequent in mixed forests and shrubberies round villages, etc. of Pegu; also Tenasserim, Moulmein; Andamans. Fl. May, June.

### Cissampelos, L.

1. C. PAREIRA, L. sp. pl. 1473; Hf. and Th. Fl. Ind. I. 198 and Ind. Fl. I. 103; Scheff. Obs. Phyt. III. 79, t. 14. (*C. Caapa*, L. sp. pl. 1473; Roxb. Fl. Ind. III. 842; *C. convolvulacea*, Willd.; Roxb. l. c.)

HAB. Common all over Burma and adjacent provinces, in all leafshedding forests and in cultivated lands, but specially in the savannahs and savannah-forests, up to 3000 ft. elevation. Fl. H. S.

**Anamirta, Colebr.**

**1.** A. COCCULUS, WA. Prod. I. 446; Hf. Ind. Fl. I. 98. (*A. paniculata*, Colebr. Linn. Trans. XIII. 66; Miers Contr. Bot. III. 51; *Menispermum Cocculus*, L. sp. pl. 1468; Roxb. Fl. Ind. III. 807; *Menispermum heteroclitum*, Roxb. l. c. 817).

HAB. Tenasserim, Moulmein (Falconer). Fl. Febr.

**Tiliacora, Colebr.**

**1.** T. RACEMOSA, Colebr. in Lin. Trans. XIII. 67; Miers Contr. Bot. III. 76 t. 104; Hf. Ind. Fl. I 99. (*Menispermum polycarpum*, Roxb. Fl. Ind. III. 816; *Tiliacora acuminata*, Miers in Tayl. Ann. ser. 2. VII. 39; Scheff. Obs. Phytol. III. 74. t. 7) *Cocculus acuminatus*, DC. Prod. I. 99; Deless. Icon. Sel. I. t. 95).

HAB. Pegu (teste F. Mason.)

**Limacia, Lour.***Conspectus of species.*

*Subg. 1. Hypserpa*, Miers. Sepals 8—12, broad, of thin texture, the smaller ones imbricate. Older leaves glabrous; stamens 6 to 10, ... ... ... *L. cuspidata*.

*Subg. 2. Eu-Limacia*, Miers. Sepals 9, thick, valvate in bud.

Stamens 3; adult leaves glabrous, ... ... ... *L. triandra*.

Stamens 6; branches and leaves beneath velvety tomentose, ... ... *L. velutina*.

**1.** L. CUSPIDATA, Hf. and Th. Fl. Ind. I. 189, and Ind. Fl. I. 100. Scheff. Obs. Phytogr. III. 75 t. 8.

HAB. Tenasserim, Mergui (Griff.).

**2.** L. TRIANDRA, Miers in Tayl. Ann. ser. 2, VII. 43; Hf. Ind. Fl. I. 100.; (*Menispermum triandrum*, Roxb. Fl. Ind. III. 816; *L. Amherstiana*, Miers Contr. III. 112).

HAB. Prome (Wall.); Tenasserim, Kogun, Amherst (Wall. and Falc.).

**3.** L. VELUTINA, Miers in Tayl. Ann. ser. 2, VII. 43; Hf. Ind. Fl. I. 100. (*Cocculus villosus*, Griff. Not. Dicot. 308?).

HAB. Tenasserim, Moulmein (Lobb. 335); Mergui (Griff.).

**Cocculus, DC.***Conspectus of species.*

*Subg. 1. Cocculus*. Styles simple.

Leaves glabrous, on very long petioles, ... ... ... *C. glaucescens*.

Leaves more or less pubescent, especially beneath; petioles short, ... *C. villosus*.

*Subg. 2. Pericampylus*. Styles 2-parted.

Leaves almost peltate, tomentose or pubescent beneath, ... *C. ineanus*.

**1.** C. GLAUCESCENS, Bl. Bydr. 25; Miq. Ann. Mus. Lugd. Bat. IV. 84. (*C. macrocarpus*, WA. Prod. I. 13; Wight Ill. I. 22, t. 7; Hf. Ind. Fl. I. 101).

**Cyclea, Arn.**

1. C. PELTATA, Hf. and Th. Fl. Ind. I. 201 and Ind. Fl. I. 104; Scheff. Obs. Phyt. III. 79, t. 15.

HAB. Not unfrequent in the open, especially the hill Eng-forests, and in dry and drier upper mixed forests all over Burma from Chittagong and Ava down to Tenasserim. Fl. Fr. Oct. to March.

**Pachygone, Miers.***Conspectus of species.*

Inflorescence and drupes densely tomentose; leaves with prominent nervation, *P. dasycarpa*.  
Inflorescence glabrous; leaves almost polished, ... ... *P. odorifera*.

1. *P. DASYCARPA*, Kurz in Journ. As. Soc. Beng. 1870. 62. (*Antitaxis ramijlora*, Miers Contr. III. 1871, 358).

HAB. Upper Tenasserim, Moulmein District, on limestone (Dr. Stoliczka). Fl. R. S.

2. *P. ODORIFERA*, Miers Contr. Bot. III. 333.

HAB. Common in the swamp forests of Prome, Pegu and Martaban; Tenasserim, Moulmein, on limestone rocks (Parish).

I have seen no authentic specimens of *P. odorifera*, and refer my plant here on the authority of Baker (*in lit.*). Unfortunately I did not succeed in finding either flower or fruit of this common climber, but it certainly is different from *P. ovata*.

One or two other large-leaved species occur on the Andamans and Nicobars, but they are only in leaves.

**BERBERIDEÆ.***Conspectus of genera.*

*Trib. I. LARDIZABALEÆ.* Flowers unisexual or polygamous. Carpels 3. Usually climbers.

1. *PARVATIA*. Leaves digitate. Stamens monadelphous. Climbers.

*Trib. II. BERBERIDEÆ.* Flowers hermaphrodite. Carpel solitary, erect or stemless.

2. *BERBERIS*. Ovules erect, basilar. Fruit a berry. Shrubs.

**Berberis, I.**

1. *B. NEPALENSIS*, Spreng. Syst. veg. II. 120; Hf. Ind. Fl. I. 109 (*Mahonia Nepalensis*, DC. Prod. I. 109 Deless. Icon. sel. II. t. 4; *B. Leschenaultii*, Wall. Cat. 1479; Wight Jc. t. 940).

HAB. Tenasserim, Mergui (Griff.).

Hf. and Th. in the first edition of their Flora of India cite Mergui as a habitat for *Parvatia Brunoniana*; Dr. Brandis, however, informs me that no Burmese specimens of this species exist in the Kew Herbarium.

## NYMPHÆACEÆ.

## Conspectus of genera.

*Subord. I. NYMPHÆÆ.* Sepals 4—6. Petals and stamens numerous. Carpels confluent with one another or with the disk into one ovary; ovules many. Seeds albuminous.

1. *NYMPHÆA*. Sepals, petals and stamens half superior, inserted on the disk, the latter confluent with the carpels. Not armed.

2. *BARCLAYA*. Sepals inferior; petals superior; carpels immersed in the torus. Not armed.

3. *EURYALE*. Sepals, petals and stamens superior. Carpels immersed in the torus. Armed with sharp thorns.

*Subord. II. NELUMBONEÆ.* Sepals 4 or 5. Petals and stamens numerous, hypogynous. Carpels sunk in pits without order in the flat turbinate torus.

4. *NELUMBO*. Only genus.

## Nymphaea, L.

## Conspectus of species.

Anthers without appendage, ...	...	...	...	...	... <i>N. Lotus</i> .
Anthers terminated with a long appendage, ...	...	...	...	...	... <i>N. stellata</i> .

1. *N. LOTUS*, L. sp. pl. 729; Hf. and Th. Fl. Ind. I. 241 and Ind. Fl. I. 114.

Var. *a.* *LOTUS*, Hf. and Th. l. c.; (*N. rubra*, Roxb. Fl. Ind. II. 576; Wight Ill. t. 10; Bot. Rep. t. 503; Bot. Mag. t. 1280, 1364 and 4665; *N. esculenta*, Roxb. l. c. 578).

Var. *β.* *CORDIFOLIA*, Hf. and Th. l. c.

Var. *γ.* *PUBESCENS*, Hf. and Th. l. c. (*N. pubescens*, Willd. sp. pl. II. 1154?; *N. Lotus*, Roxb. Fl. Ind. II. 577).

HAB. In tanks, lakes and swamps, etc.; var. *a.* not unfrequent in Pegu; also Tenasserim; var. *β.* in Chittagong; var. *γ.* not unfrequent in lakes and stagnant waters of the lower parts of Pegu. Fl. R. S.

2. *N. STELLATA*, Willd. sp. pl. II. 1153; Hf. and Th. Ind. I. 243 and Ind. Fl. I. 114.

Var. *α.* *CYANEA*, Hf. and Th. l. c. (*N. cyanea*, Roxb. Fl. Ind. II. 577; *N. stellata*, Bot. Mag. t. 2058).

Var. *β.* *PARVIFLORA*, Hf. and Th. l. c. (*N. stellata*, Willd. l. c.; Bot. Rep. t. 330; Roxb. Fl. Ind. II. 577.)

Var. *γ.* *versicolor*, Hf. and Th. l. c.

HAB. In stagnant waters and swamps; var. *α.* and *β.* frequent in Chittagong, Pegu and Arracan; var. *γ.* Chittagong. Fl. R. S.

## Barclaya, Wall.

1. *B. LONGIFOLIA*, Wall. in Linn. Trans. XV. 442, t. 18; Hook. Icon. Pl. t. 809-10; Griff. Not. Dicot. 218, t. 57; Hf. Ind. I. 115.

HAB. In running streams; Pegu, Rangoon; Tenasserim, Moulmein and southwards to Mergui, apparently frequent. Fl. R. S.

**Euryale, Salisb.**

1. E. FEROX, Salisb. Ann. Bot. II. 73; Roxb. Corom. Pl. III. t. 244; Bot. Mag. t. 1447; Griff. Dicot. t. 657; Hf. Ind. I. 115. (*Anneslea spinosa*, Roxb. Fl. Ind. II. 573; Bot. Reg. t. 618).

HAB. Chittagong, in swamps. Fl. R. S.

**Nelumbo, Ad.**

1. N. NUCIFERA, Gaertn. Fruct. I. 73; Casp. in Miq. Ann. Mus. Lugd. Bat. II. 242. (*Nelumbium speciosum*, Willd. sp. pl. II. 1258; Roxb. Fl. Ind. II. 647; Bot. Mag. t. 903; Wight Ill. I. t. 9; Hf. Ind. Fl. I. 116),

HAB. Not unfrequent in stagnant waters of the alluvial plains of Pegu; frequently cultivated in tanks, pagodas, etc. Fl. Apr. May.

**PAPAVERACEÆ.***Conspectus of genera.*

1. PAPAVER. Capsules opening by short valves or pores. Stigmas 4 or more, radiating on a sessile disk.

2. ARGEMONE. Capsules opening by short valves. Stigmas 4 to 6, radiating from the top of a depressed style.

**Papaver, L.**

- \*1. P. SOMNIFERUM, L. sp. pl. 726; Roxb. Fl. Ind. II. 571; Engl. Bot. t. 2145; Sibth. Fl. Græc. t. 491; Rohb. Fl. Germ. III. t. 17; Hf. and Th. Fl. Ind. I. 250.

HAB. Not much cultivated in Burmah, especially in Ava. Fl. Febr. March, Fr. Apr. May.

**Argemone, L.**

- \*1. ARG. MEXICANA, L. sp. pl. 727; Roxb. Fl. Ind. II. 571; Wight Ill. I. t. 11.; Bot. Mag. t. 243; Bot. Reg. t. 1343; Gray. Gen. t. 47; Hf. Ind. Fl. I. 117.

HAB. Domesticated in lower Ava (J. Anderson); in cultivated lands near Rangoon, sporadically. Fl. Jan.

**CRUCIFERÆ.***Conspectus of genera.*

- \* Pods elongate or short, dehiscent along their whole length, not jointed, rarely indehiscent at the summit. Septa and valves equally broad and parallel.  
O Cotyledons accumbent.

1. NASTURTIUM. Pods long or short, the valves turgid or not. Seeds small, in 2 rows. Flowers usually yellow.

2. CARDAMINE. Pods narrow, elongate linear, the valves flat and elastic. Seeds in 2 rows. Flowers usually white.

O O Cotyledons longitudinally conduplicate.

3. **BRASSICA.** Pods elongate. Stigma truncate or 2-lobed. Seeds in a single row.  
 \* \* Pods short, dehiscing along their whole length, not articulate, the valves flat, at right angles to the septum.
4. **LEPIDIUM.** Pods oblong, notched, 2- rarely 4-seeded. Flowers white.  
 \* \* \* Pods elongate, indehiscent, not jointed but contracted and pithy within between the seeds. Cotyledons incumbent.
5. **RAPHANUS.** Flowers pale lilac or white with coloured veins.

### Nasturtium, L.

#### *Conspectus of species.*

Pods rather thick, 2 to 5 times longer than the pedicels, more or less curved, *N. Indicum*.  
 Pods very slender, straight or nearly so, 1 to  $1\frac{1}{2}$  in. long, ... ... *N. montanum*.

1. *N. INDICUM*, L. Mant. 93; Hf. and Th. in Linn. Proc. V. 138. (*N. Madagasgariense*, WA. Prod. I. 19; Wight Ill. I. t. 13; *Sinapis divaricata*, Roxb. Fl. Ind. III. 123).

Var.  $\beta$ . *BENGHALENSE* (*N. Benghalense* DC. Syst. II. 198; Hf. and Th. in Linn. Proc. V. 139).

Var.  $\gamma$ . *GLABRUM*, quite glabrous, the flowers thrice as large; pods larger and on longer pedicels; racemes bracted. Habit of *Sinapis*.

HAB. Var.  $\beta$ . very common on muddy banks of rivers, in rubbishy places round villages, all over Pegu and Martaban; also Chittagong and Tenasserim; var.  $\gamma$ . in the dried up bed of streamlets in the swamp-forests of the Irrawaddi alluvium. Fl. January to June; Fr. Febr. July.

Var.  $\gamma$ . is a very distinct form and will probably have to be separated, but unfortunately there are no ripe pods.

2. *N. DIFFUSUM*, DC. Prod. I. 139; Miq. Fl. Ind. Bat. I/2. 94 and Ill. Fl. Arch. Ind. 1870, 14. (*N. Montanum*, Wall. in Linn. Proc. V. 139; Bth. Fl. Hongk. 16.; *Sinapis pusilla*, Roxb. Fl. Ind. III. 125?).

HAB. Ava (Wall.).

### Cardamine, L.

1. *C. HIRSUTA*, L. sp. pl. 915; Engl. Bot. t. 492, Hf. and Th. in Linn. Journ. V. 146.

Var.  $\beta$ . *SYLVATICA*, Hf. and T. And. Ind. Fl. I. 138.

HAB. Ava, Bhamo (J. Anderson); Martaban, Toukyeghat, in shady muddy places (only one specimen!). Fl. Febr. March.

### Brassica, L.

#### *Conspectus of species.*

Stem-leaves at base stem-clasping with their auricles, ... ... *B. campestris*.  
 Stem-leaves often petioled, not stem-clasping,  
 Stem-leaves narrowed at base or petioled; flowers yellow, ... *B. juncea*.  
 Stem-leaves broad at base and sessile but not stem-clasping; petals white or yellowish white with violet veins, ... ... ... *B. oleracea*.

1. *B. CAMPESTRIS*, L. sp. pl. 931; Engl. Bot. t. 2224; Hf. Ind. Fl. I. 156. (*B. rapa*, L. sp. pl. 931; Engl. Bot. t. 2176; *B. Napus*, L. sp. pl. 931; *Sinapis dichotoma*, Roxb. Fl. Ind. III. 117; *S. glauca*, Roxb. l. c. 118; *B. brassicata*, Roxb. l. c. 120).

HAB. Arracan, rare in fields near Akyab; Ava, Bhamo. Fl. Deeb.

2. *B. JUNCEA*, Hf. and Th. in Linn. Proc. V. 170. and Ind. Fl. I. 157. (*Sinapis juncea*, L. sp. pl. 934; *Sinapis ramosa*, Roxb. Fl. Ind. III. 119; *Sinapis rugosa*, Roxb. l. c. 122; *Sinapis patens*, Roxb. l. c. 124; *Sinapis cuneifolia*, Roxb. l. c. 116).

HAB. Frequent in fields, along river-banks, etc., all over Pegu and Martaban; also much cultivated; Ava, Bhamo. Fl. Fr. C. S.

- \* 3. *B. OLERACEA*, L. sp. pl. 932; Engl. Bot. t. 637; Fl. Dan. XII. t. 2056: Roxb. Fl. Germ. 97: DC. Prod. I. 213.

HAB. Not much cultivated in several varieties like cabbage, cauliflower, Kohlrabbi, etc. Fl. Febr. March; Fr. Apr.

#### *Lepidium*, L.

- \* 1. *L. SATIVUM*, L. sp. pl. 899; Roxb. Fl. Ind. III. 116; Hf. Ind. Fl. I. 159; Fl. Dan. X. t. 1761; Sibth. Fl. Graec. t. 616; Roxb. Fl. Germ. II. t. 9; Wight Ill. I. t. 12; NE. Gen. Germ. X. t. 10.

HAB. Cultivated only. Fl. Fr. C. S.

#### *Raphanus*, L.

- \* 1. *R. SATIVUS*, L. sp. pl. 935 Roxb. Fl. Ind. III. 126; Rchb. Fl. Germ. II. t. 3.; NE. Gen. Germ. X. t. 10; Hf. Ind. Fl. I. 166.

HAB. Cultivated and often like wild on the banks of rivers, etc. Fl. Febr. March; Fr. Apr.

#### *CAPPARIDEÆ.*

##### *Conspectus of genera.*

*Trib. I. CLEOMEÆ.* Fruit capsular, 1-celled, usually pod-like, rarely short or didymous; capsules 4—8- or many-seeded. Herbs.

✗ Torus short, the stamens inserted immediately within the sepals and petals.

1. *CLEOME*. Torus often produced into an appendage. Stamens 4 to 6 or more, some of them often without anthers.

✗ ✗ Torus elongated, bearing the stamens at the top under the ovary.

2. *GYNANDROPSIS*. Stamens 6, all perfect; filaments long.

*Trib. II. CAPPAREÆ.* Fruit berry-like or drupaceous. Shrubs or trees.

\* Sepals united at the base in a funnel- or bell-shaped tube, or forming a spathaceous calyx.

3. *NIEBUHRIA*. Calyx-tube funnel- or bell-shaped, the limb 4-lobed, valvate in bud. Petals none. Berry ovoid. Leaves 1- to 3-foliolate.

\* \* Sepals free or connate only at the very base.

✗ Petals present.

4. *CAPPARIS*. Calyx various. Corolla imbricate. Petals 4. Stamens usually definite, inserted at the base of the short torus. Leaves simple.

5. *CADABA*. The 2 outer sepals valvate in bud. Torus elongated into a tube. Berry cylindrical, almost indehiscent. Leaves 1- to 3-foliate.

6. *CRATÆVA*. Flowers polygamous. Corolla open in bud already. Sepals 3, all imbricate in bud. Petals 4, on long claws. Leaves 3- to 5-foliate.

XX Petals none.

7. *ROYDSIA*. Sepals 6. Drupes 1—3-seeded. Leaves simple.

### Cleome, L.

#### *Conspectus of species.*

Plant thinly appressed hispid. Petals white or pale rose-coloured, ... *C. Chelidonii*.  
Glandular-pubescent; petals yellow, ... ... ... *C. viscosa*.

1. *C. CHELIDONII*, L. f. Suppl. 300; Roxb. Fl. Ind. III. 127; Hf. Ind. Fl. I. 170. (*Polanisia Chelidonii*, DC. Prod. I. 242; Wight Ic. t. 319).

HAB. Not unfrequent along the borders of the Prome road between Poungday and the Myitmaka choung. Fl. March, Apr.

I do not feel quite sure whether this plant is really indigenous. As it seems restricted to the locality given above, it may well have been introduced by the Madras people employed in the construction of the Prome road.

2. *C. viscosa*, L. sp. pl. 447; Roxb. Fl. Ind. III. 128; Hf. Ind. Fl. I. 170. (*Polanisia icosandra*, WA. Prod. I. 22; Wight Ic. t. 2.).

HAB. A weed all over Burma from Chittagong and Ava down to Tenasserim, in cultivated lands, along river banks, in rubbishy places, ruined pagodas, etc. Fl. Fr. R. S.

### Gynandropsis, DC.

1. *G. PENTAPHYLLA*, DC. Prod I. 238; Hf. Ind. Fl. I. 171. (*Cleome pentaphylla*, L. sp. pl.; Roxb. Fl. Ind. III. 126; A. Gray, Gen. t. 78; Bot. Mag. t. 1681).

HAB. A weed all over Burma from Chittagong and Ava down to Tenasserim, in rubbishy places, etc., around villages. Fl. May, June; Fr. June, July.

### Niebuhria, DC.

1. *N. ? VARIABILIS*, (*Capparis ? variabilis*, Wall. Cat. 7004; Hf. Ind. Fl. I. 180).

HAB. Ava, in the Irrawaddi valley along the banks of the river below Yenang choung, and on the Segain hills.

### Capparis, L.

#### *Conspectus of species.*

\* Pedicels arising from above the axils of the leaves in a line one above the other (supra-axillary); or rarely axillary and solitary.

O Gynophore and ovary glabrous or nearly so.

† Ovary almost sessile, the gynophore being only  $\frac{1}{2}$  to 1 lin. long.

Glabrous; leaves large, chartaceous; pedicels 2—3 lin. long, the upper flowers forming terminal racemes (by the reduction of leaves), ... *C. roysiaeefolia*.

† † Ovary on a long slender gynophore.

✗ All parts glabrous.

Leaves as in preceding, chartaceous, much veined with a callous point at the usually retuse apex, ... ... ... ... ... ... ... *C. micracantha*.

Leaves acuminate.

Unarmed; pedicels and sepals outside glabrous; stamens numerous, petals pilose, ... *C. membranifolia*.

Thorny; pedicels glabrous; sepals woolly along the borders; stamens 8, ... *C. disticha*.

Unarmed or nearly so; sepals with tomentose margins, ... *C. vminor*.

✗ ✗ Young shoots and sepals rusty or greyish tomentose or pubescent.

Leaves chartaceous, ovate, green, while young tawny or rusty pilose beneath, flowers usually several together, ... ... ... ... ... *C. horrida*.

Leaves green, oboval, while young thinly appressed pubescent, soon quite glabrous and coriaceous; petioles  $\frac{1}{2}$ — $\frac{3}{4}$  in. long; flowers several, ... *C. crassifolia*.

Leaves glaucous, rhomboid-ovate to rhomboid-linear, acute, while young minutely greyish puberulous beneath; petioles only  $\frac{1}{4}$  to  $\frac{1}{3}$  in. long; berries verrucose; flowers solitary, ... ... ... ... ... *C. polymorpha*.

O O Gynophore and ovary densely tomentose.

All younger parts and leaves tomentose or pubescent; pedicels and sepals densely tomentose, ... ... ... ... ... *C. flavicans*.

\* \* Pedicels in umbels or corymbs in the axils of the leaves or on shortened axillary branchlets, sometimes collected into terminal or lateral panicles.

✗ Calyx and pedicels densely tomentose Ovary glabrous.

All parts tomentose or shortly and densely yellowish pubescent, the hairs not papillose; peduncle naked, ... ... ... ... ... *C. grandis*.

Apparently as preceding, but upperside of leaves papillose; peduncle 1-leaved at tip, ... ... ... ... ... *C. orbiculata*.

Branches brown-tomentose; leaves glabrous, 3-plinerved, ... ... *C. trinervia*.

✗ ✗ Calyx and pedicels glabrous. Berry 1-seeded.

O Gynophore very short (in fruit not above  $\frac{1}{2}$  in.); umbels or corymb peduncled.

Branchlets pubescent; leaves thick coriaceous, glaucous, retuse or blunt; umbels axillary, berries 1—2 seeded, ... ... ... ... ... *C. glauca*.

Glabrous; leaves purplish beneath, acuminate; umbels in terminal panicles, berries 1-seeded, ... ... ... ... ... *C. Hasseltiana*.

O O Gynophore long and slender.

† Umbels or corymbs peduncled.

Glabrous; leaves green, retuse; flowers  $\frac{1}{2}$  in. in diameter, the umbels arranged in terminal panicles; berries several-seeded, ... ... ... ... *C. floribunda*.

Glabrous; petiole puberulous; flowers 2 in. in diameter, ... ... *C. versicolor*.

† † Umbels sessile or nearly so.

Leaves green, retuse; corymbs usually terminal on the branchlets, many-flowered, ... *C. sepiaria*.

I. C. MICRACANTHA, DC. Prod. I. 247; Hf. Ind. Fl. I. 179. (*C. callosa*, Bl. Bydr. 53; Miq. Ill. Fl. Arch. Ind. I. 29. t. 16.)

HAB. Pegu, Rangoon (R. Scott); Upper Tenasserim, Weingo valley, Moulmein (Wall., Falc.)

2. C. MEMBRANIFOLIA, Kurz MS.

HAB. Not unfrequent in the tropical forests of the eastern slopes of the Pegu Yomah and Martaban. Fl. Apr. May.

3. C. VIMINEA, Hf. and Th. Ind. Fl. I. 179.

HAB. Tenasserim (teste Hf. and Th.).

4. C. DISTICHA, Kurz MS. (*C. oxyphylla*, Wall. Cat. 6997, non Miq.).

HAB. Frequent in the swamp-forests and inundated localities of the Irrawaddi and Sittang alluvium and Martaban. Fl. Apr. May.

5. C. HORRIDA, L. f. Suppl. 264; Wight Ic. t. 173; Griff. Not. Dicot. 579. t. 608; Hf. Ind. Fl. I. 178 pp. (*C. Zeylanica*, Roxb. Fl. Ind. II. 567.)

HAB. Frequent in mixed forests and savannahs, but more especially in the dry forests of Prome and Pegu; also Martaban. Fl. Apr. May.

6. C. CRASSIFOLIA, Kurz in Journ. As. Soc. Beng., 1873.

HAB. Frequent in the dry forests of Prome District. Fl. March.

7. C. POLYMORPHA, Kurz in Journ. As. Soc. Beng., 1873.

HAB. Frequent in the dry and Eng forests of Prome district. Fl. March; Fr. Apr. May.

8. C. FLAVICANS, Wall. Cat. 7003; Kurz in Journ. As. Soc. Bengal 1870, 62; Hf. Ind. Pl. I. 180.

HAB. Ava, Irrawaddi valley at Yenangchoung and Segain (Wall.) Fr. Sept.

9. C. GRANDIS, L. f. Mant. 263; Hf. Ind. Fl. I. 176. (*C. bisperma*, Roxb. Fl. Ind. II. 568 teste Hf. Th.) var.  $\beta$ . AURICANS, the nerves beneath more prominent; flowers only  $\frac{1}{3}$  to  $\frac{1}{2}$  in. in diameter (*C. auricans*, Kurz MS).

HAB. Frequent in the dry forests of the Prome District. Fl. Apr.

The Burmese plant will most probably have to form a distinct species, if it should not turn out to be identical with the following, of which the description in Hook. Ind. Fl. is too imperfect for recognition.

10. C. ORBICULATA, Wall. ap. Hf. Ind. Fl. I. 176.

HAB. Ava, Segain hills.

11. C. TRINERVIA, Hf. and Th. Ind. Fl. I. 175.

HAB. Tenasserim (Helf.); Tavoy (Parish).

12. C. GLAUCA, Wall. Cat. 7005; Hf. Ind. Fl. I. 180.

HAB. Ava, common near pagodas at Pagha myo (Wall.).

13. C. HASSELTIANA, Miq. Ill. Fl. Arch. Ind. I. 24. t. 13. (*C. ambigua*, Kurz in And. Rep. ed. 2. 30.)

HAB. In the tropical forests of South Andaman. Fr. Apr. May.

14. C. FLORIBUNDA, Wight Ill. I. 33. t. 14.; Hf. Ind. Fl. I. 177. (*C. oligandra*, Griff. Not. Dicot. 577. teste Hf. and Th.).

HAB. Tenasserim, Mergui (Griff.).

15. *C. VERSICOLOR*, Griff. Not. Dicot. 577; Hf. Ind. Fl. I. 175.

HAB. Tenasserim, Mergui, in forests (Griff.). Fl. Jan.

I have not seen specimens, but it cannot be compared with *C. Salaccensis*, Bl., which has small flowers, (cf. Miq. Illustr. Fl. Arch. Ind. I. t. 12).

16. *C. SEPIARIA*, L. sp. pl. 720; Roxb. Fl. Ind. II. 568; Jacquem. Voy. Ind. or. t. 22.; Hf. Ind. Fl. I. 177.

HAB. Common along the rocky coast of the Andamans; Pegu (teste Hf. and Th.). Fl. May.

### Cratæva, L.

#### *Conspectus of species.*

Flowers corymbose; fruits globular; large tree; ovary globular, ... *C. Roxburghii*.

Flowers corymbose; fruits ovoid-oblong; ovary oblong, ... *C. narvala*.

Flowers solitary, axillary; fruits oblong; meagre shrub, ... *C. hygrophila*.

1. *C. ROXBURGHII*, Br. in Denh. and Clapp. Trav. Append. 224; Hook. Icon. Pl. t. 178; Kurz in Trim. Journ. Bot., 1874, 195, t. 148, f. 1—5. (*Capparis trifoliata*, Roxb. Fl. Ind. II. 571.).

HAB. Not unfrequent in the dry forests of the Prome District; Upper Tenasserim. Fl. H. S.; Fr. Close of R. S.

2. *C. NARVALA*, Ham. in Linn. Trans. XV; Kurz in Trim. Journ. Bot., 1874, 195.

HAB. Tenasserim, Moulmein District. Fl. Febr. March.

3. *C. HYGROPHILA*, Kurz in Journ. As. Soc. Beng., 1872, 292 and in Trim. Journ. Bot., 1874, 196, t. 148, f. 6—7.

HAB. Not uncommon in the swamp forests of the Irrawaddi alluvium. Fl. (Decb. or Nov. ?); Fr. C. S.

### Roydsia, Roxb.

#### *Conspectus of species.*

*Subg. 1. Eu-Roydsia*. Styles 3, short, sessile.

Sepals a line long, 4 of them free, the 2 others coherent, ... *R. obtusifolia*.

*Subg. 2. Alytostylis*, Hf. Style long, terminated by 3 minute stigmas. Sepals ligulate. blunt, ... *R. parviflora*.

1. *R. OBTUSIFOLIA*, Hf. and Th. Ind. Fl. I. 180 and 409.

HAB. Frequent in the swamp forests and along inundated river banks of the alluvial lands of the Irrawaddi and Sittang rivers; also Tenasserim. Fl. March; Fr. May, June.

2. *R. PARVIFLORA*, Griff. Not. Dicot. 578. t. 607. f. 1.; Hf. Ind. Fl. I. 409.

HAB. Ava, in woods near the serpentine mines at Hookum (Griff.).

*MORINGACEÆ.**Moringa*, Juss.

1. *M. PTERYGOSPERMA*, Gaertn. Fruct. II. 314. t. 147; Wight Ill. I. t. 77; Miq. Fl. Ind. Bot. I. 350. (*Hyperantha Moringa*, Vhl. Symb. I. 30; Griff. Not. Dicot. 572. t. 609. f. 1—2).

HAB. Cultivated in and around villages all over Burma and the adjacent islands. Fl. Febr. March; Fr. H. S.

A most perplexing genus to systematists. It appears to me nearest allied to *Violaceæ*.

*VIOLACEÆ.**Conspectus of genera.*

*Trib. I. VIOLEÆ.* Corolla irregular, the lower petal much larger. Herbs or perennials,

1. *VIOLA*. Sepals produced at base. Lower petal spurred or saccate.

2. *JONIDIUM*. Sepals not produced at base. Petals clawed, the lower one gibbous or saccate at base.

*Trib. II. ALSODEIEÆ.* Corolla regular or nearly so. Shrubs or trees.

3. *ALSODEIA* Petals 5, free. Connective produced beyond the anther. Capsule loculicidal.

*Viola*, L.*Conspectus of species.*

✗ Stigma 3-lobed, terminal.

Without stolons; stigma 3-lobed; stipules entire, ...	...	... <i>V. Patrinii</i> .
Stoloniferous; stigma 2-lobed; stipules toothed, ...	...	... <i>V. diffusa</i> .

✗✗ Stigma very oblique or quite lateral.

Stoloniferous; stipules toothed or fimbriate, ...	...	... <i>V. serpens</i> .
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1. *V. PATRINII*, DC. Prod. I. 293; Hf. Fl. Ind. I. 183. (*V. primulifolia*, L. sp. pl. p. p.; Roxb. Fl. Ind. I. 650; *V. Walkerii*, Wight Ill. I. 42. t. 18).

HAB. Ava, Khakyen hills, Ponsee (J. Anderson). Fl. March.

2. *V. DIFFUSA*, Ging in DC. Prod. I. 298; Hf. Ind. Fl. I. 183.

HAB. Ava, Khakyen hills, Ponsee (J. Anderson). Fl. Fr. March.

3. *V. SERPENS*, Wall. in Roxb. Fl. Ind. II. 449; Oudem. in Miq. Ann. Mus. Lugd. Bot. III. 76; Hf. Ind. Fl. I. 184; Royle Ill. Him. Pl. 74. t. 18. f. 1.

HAB. Ava, Khakyen hills (J. Anderson); not unfrequent in the damp hill-forests along rocky rivulets in Martaban at 3000 to 6000 ft. elevation; Tenasserim, Moulmein (Parish). Fl. Fr. March.

**Jonidium, Vent.**

**1.** J. SUFFRUTICOSUM, Ging in DC. Prod. I. 311; Wight Ill. t. 19 and Ic. t. 308; Hf. Ind. Fl. I. 185. (*Viola suffruticosa*, L.; Roxb. Fl. Ind. I. 649).

HAB. I have observed only a few sterile plants along a road in Rangoon.

**Alsodeia, Thouars.***Conspectus of species.*

*Subg. 1.* *Dioryctandra*, Hassk. Stamens exserted, anthers cohering in a cone.

Leaves small; capsules very small, almost sessile, ... ... *A. Roxburghii*.

*Subg. 2.* *Alsodeia*. Stamens included; anthers free.

✗ Ovary and style glabrous.

O Flowers in long racemes.

Racemes and calyx puberulous, ... ... ... ... *A. longiracemosa*.

O O Flowers fascicled.

Pedicels and calyx glabrous, ... ... ... ... *A. Bengalensis*.

✗ ✗ Ovary and style pubescent or tomentose.

Leaves rather large, glabrous or nearly so, ... ... ... ... *A. Griffithii*.

Leaves pubescent; capsule densely pubescent, ... ... ... ... *A. mollis*.

**1.** A. ROXBURGHII, Wall. Cat. 7189; Hf. Ind. Fl. I. 186. (*Vareca heteroclita*, Roxb. Fl. Ind. I. 648).

HAB. Not unfrequent in the tropical forests of the Andamans. Fl. May, June.

**2.** A. LONGIRACEMOSA, Kurz in Journ. As. Soc. Beng. 1870, 63. (*A. racemosa*, Hf. and Th. Ind. Fl. I. 186. non Mart.).

HAB. Rather frequent in the tropical forests of Martaban up to 1500 ft. elevation. Fl. March, Apr.; Fr. May, June.

**3.** A. BENGALENSIS, Wall. Act. Med. and Phys. Soc. Cale. VII. 224; Hf. Ind. Fl. I. 186.

HAB. Not unfrequent in the tropical forests of the eastern slopes of the Pegu Yomah and Martaban, entering here also the drier hill forests up to 4000 ft. elevation; common on the Andamans. Fl. H. S.

**4.** A. GRIFFITHII, Hf. and Th. Ind. Fl. I. 187.

HAB. Ava, near the serpentine mines in the Hookum valley (Griff.).

**5.** A. MOLLIS, Hf. and Th. Ind. Fl. I. 188.

HAB. Tenasserim, Mergui (Griff.).

**BIXINEÆ.***Conspectus of genera.*

*Trib. 1.* *BIXEÆ*. Petals broad, twisted in bud, without a scale or basal appendage.

Anthers opening by pores or short slits.

**1.** COCHLOSPERMUM. Capsule 3-valved. Seeds cochleate, pilose or woolly. Leaves palmately-lobed or digitate.

2. **BIXA.** Capsule 2-valved. Seeds straight, glabrous, with a pulpy testa. Leaves simple.

*Trib. II. FLACOURTIEÆ.* Petals none, or if present only small, imbricate in the bud, without scales. Anthers opening by valves.

\* Petals present.

3. **SCOLOPIA.** Flowers bisexual. Petals 4 to 6. Stamens indefinite.

\* \* Petals none.

4. **FLACOURTIA.** Flowers usually dioecious. Ovary 2- to 8-celled.

5. **XYLOSMA.** Flowers dioecious. Ovary 1-celled. Seeds glabrous.

*Trib. III. PANGIEÆ.* Flowers dioecious. Petals with an adnate scale or basal appendage.

\* Calyx at first entire, afterwards splitting variously.

6. **GYNOCARDIA.** Calyx cup-shaped. Stamens numerous, free. Styles 3 with corollate stigmas.

7. **RYPARIA.** Calyx globose, rupturing into 3 to 4 deciduous segments. Stamens 4 or 5, united in a tubular column.

✗ ✗ Sepals distinct already in bud, much imbricated.

8. **HYDNOCARPUS.** Sepals 4 or 5. Petals 5—9. Stamens 5 or indefinite.

#### Cochlospermum, Kth.

1. **C. GOSSEYPIUM,** DC. Prod. I. 527; Wight Ill. Ind. Bot. Suppl. 36. t. 18; Hf. Ind. Bot. I. 190. (*Bombax gossypium*, L.; Roxb. Fl. Ind. III. 169.)

HAB. In the dry forests on the hills opposite Prome. Fl. March.

#### Bixa, L.

\*1. **B. ORELLANA,** L. sp. pl. 730; Roxb. Fl. Ind. II. 581; Wight Ill. I. t. 17; Bot. Mag. t. 1456; Griff. Not. Dicot. 610; Hf. Ind. Fl. I. 190.

HAB. Frequently cultivated in and around villages all over Burma, and occasionally seen half wild along the courses of mountain streams in the Pegu Yomah.—Fl. RS; Fr. CS.

#### Scopolia, Schreb.

1. **S. ROXBURGHII,** Clos in Ann. d. sc. nat. ser. 4. VIII. 250 excl. syn.; Hf. Ind. Fl. I. 190. (*Ludia spinosa*, Roxb. Fl. Ind. II. 507.)

HAB. Tenasserim, Mergui (Griff. Helf. 211.)

Roxburgh's plant is described as having lucid leaves, but his figure as well as the plant cultivated in the HBC. have them opaque when dried.

#### Flacourtia, Comm.

##### Conspectus of species.

\* Stigma simple, subulate (not thickened at apex).

Berries the size of a pepper-kernel; pyrenes smooth, convex on back, ...*F. Sumatrana*.

\* \* Styles short or almost wanting, thickened and truncate at the apex or more or less bluntnish 2-lobed.

O Pyrenes compressed and quite flat.

Branchlets and leaves glabrous or nearly so, armed with spines; flowers dioecious,	... ... <i>F. cataphracta.</i>
As preceding but not armed; flowers hermaphrodite, ...	... ... <i>F. inermis.</i>
O O Pyrenes obovoid-3-angular with rounded back. X Leaves acuminate.	
Branchlets and leaves tawny-pubescent, ...	... ... <i>F. mollis.</i>
X X Leaves blunt or nearly so. Berries the size of a pea.	
Leaves coriaceous, 3 to 5 in. long, .....	... ... <i>F. sapida.</i>
Leaves small (1—1½ in. long), membranous.	
Armed with numerous long spines, ...	... ... <i>F. sepiaria.</i>
Unarmed, or only with a few short axillary spines, ...	... ... <i>F. rotundifolia.</i>

## 1. F. SUMATRANA, Planch. ap. Hf. Ind. Fl. I. 192.

HAB. Tenasserim (Helf. 203-1).

N. B. *Ludia foetida*, Roxb., doubtfully referred by Hf. to this species, is *Homalium foetidum*, Bth.

## 2. F. CATAPHRACTA, Roxb. Corom. Pl. III. t. 222 and Fl. Ind. III. 834; Hf. Ind. Fl. I. 193.

HAB. Frequent in the upper mixed forests of the Pegu Yomah and Martaban. Fl. Jan. Febr.; Fr. May.

## 3. F. INERMIS, Roxb. Corom. Pl. III. 16 t. 222 and Fl. Ind. III. 833; Hf. Ind. Fl. I. 192.

HAB. Martaban, along the bank of the Toukyeghat river at the 7-Pagodas. Fr. May.

## 4. F. MOLLIS, Hf. and Th. Ind. I. 192.

HAB. Tenasserim (Heif. 215; Griff.).

## 5. F. SAPIDA, Roxb. Corom. Pl. I. t. 69 and Fl. Ind. III. 835; WA. Prod. I. 29.

Var.  $\alpha$ . GENUINA, young shoots and leaves beneath and the inflorescences more or less greyish tomentose; stigmas in fruit remote.Var.  $\beta$ . PUBERULA, leaves and young shoots glabrous; inflorescence puberulous; stigmas star-like cohering, sessile.Var.  $\gamma$ . GLABERRIMA, all parts quite glabrous, stigmas only cohering during flowering.HAB. Var.  $\alpha$ . Ava (Griff.); var.  $\beta$ . and  $\gamma$ . common in the dry and Eng forests of the Prome District. Fl. Febr. March; Fr. Apr. May.6. F. SEPIARIA, Roxb. Corom. Pl. I. t. 68 and Fl. Ind. III. 835; Hf. Ind. Fl. I. 194. (*F. obcordata*, Roxb. Fl. Ind. III. 835 teste Hf. and Th.).

HAB. Chittagong.

## 7. F. ROTUNDIFOLIA, Clos in Ann. sc. nat. Bot. ser. 4. VIII. 218.

HAB. Rather frequent in the coast jungles of the Andamans. Fl. May.

**Gynocardia, R. Br.**

1. *G. ODORATA*, Roxb. Corom. Pl. III. 95. t. 299; Hf. Ind. Fl. I. 195. (*Choulmoogra odorata*, Roxb. Fl. Ind. III. 836).

HAB. Not unfrequent in the tropical forests of the Martaban hills, up to 3000 ft. elevation; also Chittagong (accord. Hf. and Th. also Rangoon and Tenasserim). Fr. March.

**Ryparia, Bl.**

1. *R. CÆSIA*, Bl. Fl. Jav. Praef. 8; Miq. Fl. Ind. Bot. I-2. 361; Kurz in Trim. Journ. Bot., 1873, 233.

HAB. In the tropical forests of South Andaman.

**Hydnocarpus Gærtn.***Conspectus of species.*

Sepals 4; petals and staminods 9—5 each, the latter free or united, ... *H. heterophyllus*.  
Sepals 5; petals and staminods 5 each, ... ... ... *H. castaneus*.

1. *H. HETEROPHYLLUS*, Bl. Rumph. IV. 22. t. 178. B. f. 1. (*Taractogenos Blumei*, Hassk. Retz. I. 127; Miq. Fl. Ind. Bat. I/2. 110).

HAB. Very frequent in the tropical forests of Martaban, less so along the eastern and southern slopes of the Pegu Yomah; also Tenasserim. Fl. Apr.; Fr. Febr. March.

The number of sepals appears constant, but that of stamens, petals, and scales varies exceedingly; the last are found free and more or less connate in flowers from the same tree.

2. *H. CASTANEUS*, Hf. and Th. Ind. Fl. I. 197.

HAB. King's Island, by the sides of torrents, (Andamans according to Hf. and Th. but more probably Mergui Archipelago where such an island exists).

**PITTOSSOREÆ.****Pittosporum, Banks.**

1. *P. FERRUGINEUM*, Ait. Hort. Kew. ed. 2. II. 27; Bot. Mag. t. 2074; Hf. Ind. Fl. I. 199.

HAB. Tenasserim, Moulmein.

**POLYGALÆ.***Conspectus of genera.*

*Trib. I. POLYGALÆ.* Seeds albuminous. Petals more or less united into a gamopetalous corolla.

O Erect herbs or perennials, rarely parasites.

1. *POLYGALA*. Stamens 8, united. The 2 inner sepals wing-like

2. *SALOMONIA*. Stamens 4 or 5. Sepals almost equal, petal-like.

O O Scandent shrubs.

3. SECURIDACA. Stamen 8, united; fruit an 1-celled indehiscent samara.

*Trib. II. XANTHOPHYLLEÆ.* Albumen none. Petals and stamens free. Fruit globular, indehiscent.

4. XANTHOPHYLLUM. Petals 5. Stamens 8. Ovary almost 1-celled, with several ovules.

### Polygala, L.

#### Conspectus of species.

*Subg. 1. Blepharidium.* The 2 inner sepals (wings) persistent, petaloid or herbaceous.

\* Wings herbaceous or green, sepal-like, not or with a narrow hyaline margin, acute or acuminate.

Erect, stout, 1 to 2 ft. high; bracts fallen before flowering. Flowers small, white with purple tips; capsule ciliate, ... ... ... *P. glomerata*.

Small, a few in. high; flowers and bracts as in preceding; capsule glabrous, not ciliate, ... *P. telephiooides*.

Small; flowers yellow or orange-yellow with dull orange tips; bracts persistent during flowering, ... ... ... ... *P. Chinensis*.

\* \* Wings petal-like and coloured, blunt and often mucronate.

O Stems terete.

Wings about a lin. long, usually puberulous; capsules oblong, puberulous, not margined, ... *P. eriopetra*.

Wings about 3 lin. long, puberulous; capsules almost orbicular with narrow ciliate margin, ... ... ... ... *P. crotalariaeoides*.

O O Stems sharply angular.

Erect, glabrous; leaves linear; flowers small, in terminal and lateral racemes, *P. leptalea*.

*Subg. 2. Semeiocardium*, Zoll. Calyx deciduous after flowering. Keel not crested. Seeds albuminous. Flowers small.

Capsules not nerved, almost rotundate, not winged, ... ... *P. glaucescens*.

Capsules strongly nerved, oblong, the membranous borders produced wing-like at the summit, ... ... ... ... *P. cardiocarpa*.

*Subg. 3. Chamæbuxus*, Tournef. Calyx deciduous. Keel crested. Albumen none. Flowers rather large. Perennials or shrubs.

Flowers pale-lilac; keel-crest 2-lobed, the lobes entire, ... ... *S. venenosa*.

Flowers pale-lilac; keel-crest 2-lobed, the lobes many-cleft: capsules membranous; strophiola minute, ... ... ... ... *P. Karenium*.

Flowers yellow; keel-crest 2-lobed, the lobes many-cleft; capsule coriaceous; strophiola very large, ... ... ... ... *P. arillata*.

1. *P. GLOMERATA*, Lour. Fl. Coch. II. 518; Miq. Fl. Ind. Bot. I/2. 125; Hf. Ind. Fl. I. 206.

HAB. Frequent in deserted hill-toungyas and pastures of the Martaban hills, up to 4000 ft. elevation. Fl. Febr. March; Fr. March.

2. *P. TELEPHIOIDES*, Willd. sp. pl. III. 876; Hf. Ind. Fl. I. 205.

HAB. Rare in the Eng forests of the western slopes of the Pegu Yoma as for instance about Myodweng. Fl. Jan.

Hardly more than a stunted variety of the former.

3. *P. CHINENSIS*, L. sp. pl. 989; DC. Prod. I. 331; Hf. Ind. Fl. I. 204. (*P. arvensis*, Willd. sp. pl. III. 876; Roxb. Fl. Ind. III. 218).

HAB. Pegu (teste Bennet). Fl. R. S.

4. P. ERIOPTERA, DC. Prod. I. 326; Deless. Ic. sel. III. t. 15; Hf. Ind. Fl. I. 203.

HAB. Apparently frequent in Ava (Yenangchoung, Paghan, Melloon, etc.); Prome hills. Fl. Fr. Sept. Decb.

5. P. CROTALAROIDES, Ham. in Don. Prod. Nep. 199; Wall. Pl. As. rar. II. t. 185; Royle Ill. Him. Pl. t. 19, fig. e.; Hf. Ind. Fl. I. 201.

HAB. Rather frequent in the Eng and dry forests of the Prome district. Fl. Fr. March.

6. P. LEPTALEA, DC. Prod. I. 325; Bth. Fl. Austr. I. 139; Hf. Ind. Fl. I. 202. (P. sp. 1 and 2, Griff. Not. Dicot. 536-537. t. 597).

HAB. Not unfrequent in the open, especially the Eng forests of Pegu, Prome, and Ava. Fl. Nov. Decb.

7. P. GLAUCESCENS, Wall. Cat. 4182; Walp. Rep. I. 234. (*P. furcata*, Royle Ill. Him. Pl. 76. t. 19, fig. B.; *Semeiocardium glaucescens*, Hassk. in Miq. Ann. Lugd. Bat. I. 151; *P. triphylla*  $\beta$ . *glaucescens*, Bennet in Hf. Ind. Fl. I. 201).

HAB. Ava, Meaong and Taong dong; Prome District; Tenasserim, Attaran. Fl. Fr. July—Sept.

8. P. CARDIOCARPA. Kurz in Journ. As. Soc. Beng. 1872, 293.

HAB. Tenasserim, Wakabin (Rev. C. Parish No. 307). Fl. Octob.

9. P. KARENSIUM, Kurz in Journ. As. Soc. Beng. 1872, 292.

HAB. Frequent in the drier hill-forests of the Martaban hills at 4000 to 6000 ft. elevation. Fl. Fr. March.

10. P. ARILLATA, Ham. in Don. Prod. Nep. 199; Wall. Pl. As. rar. I. t. 100; Griff. Not Dicot. 5352; Hf. Ind. Fl. I. 200).

HAB. Ava (teste Bennet).

### *Salomonia*, Lour.

#### *Conspectus of species.*

*Subg. 1. Salomonia*, DC. Stems leafy; not parasitic.

O Leaves on short petioles, cordate or ovate.

Glabrous; leaves acute; capsules crested, ... ... ... *S. Cantonensis*.

Blunt leaves and stems along the wings fringed; capsules crested, ... ... ... *S. longiciliata*.

Glabrous; leaves acute; capsules minute, not crested, ... ... ... *S. edentula*.

O O Leaves sessile.

Glabrous or nearly so, leaves oblong to oblong-lanceolate, ... ... ... *S. oblongifolia*.

*Subg. 2. Epiphizanthes*, Bl. Parasitic, leafless or scaly, ... ... ... *S. cylindrica*.

1. S. CANTONIENSIS, Lour. Fl. Coch. 18; Hf. Ind. Fl. I. 206. (*S. sp.* Griff. Not. Dicot. 539).

HAB. Pegu, Rangoon (R. Scott); Tenasserim, Tavoy (Wall). Fl. Fr. Aug.

2. S. LONGICILIATA, Kurz in Journ. As. Soc. Bengal, 1872, 292.

HAB. Sporadic in the Eng forests along the western slopes of the Pegu Yomah, for inst. between Pansuay and Myodweng. Fl. Fr. Deebr. Jan.

3. *S. OBLONGIFOLIA*, DC. Prod. I. 334; Deless. Ic. sel. III. t. 19; Hf. Ind. Fl. I. 207. (*S. obovata*, Wight Ill. I. t. 22.; *S. angulata*, Griff. Not. Dicot. 539. t. 585. A. f. 16?).

HAB. Tenasserim, Tavoy (Wall).

4. *S. CYLINDRICA*, (*Epirhizanthes cylindrica*, Bl. Regensb Flor. 1825. 134; Miq. Fl. Ind. Bat. I/2. 128 t. 15; *S. aphylla*, Griff. in Linn. Trans. XIX. 342; Hf. Ind. Fl. I. 207; *S. parasitica*, Griff. Not. Dicot. 538. t. 598. f. 5).

HAB. Tenasserim, on bamboo-trunks between decayed wood rather frequent about Mergui, Palar. (Griff.). Fl. Octob.

### Securidaca, L.

1. *S. INAPPENDICULATA*, Hassk in Pl. Jav. rar. 295, (*S. Tavoyana*, Wall. Cat. 4196, nomen nudum; Hf. Ind. Fl. I. 208. *S. scandens* Ham. in Wall. Cat. 4195, non Jacq. *S. paniculata*, Roxb. Fl. Ind. III. 219, non Lamk).

HAB. Chittagong; Arracan (Capt. Maregrave); Tenasserim, Tavoy (Wall). Fl. Aug.

### Xanthophyllum, Roxb.

#### *Conspectus of species.*

\* Ovary sessile (*i. e.* the stalk not exserted from the annular disk).

O Panicle remotely supra-axillary (and terminal).

Leaves glaucous and rather opaque beneath; panicles diffuse, glabrous; calyx and slender pedicels glabrous; ovary minutely pubescent, the stigma broadly 2-lobed, ... *X. virens*.

O O Panicles or racemes truly axillary (and terminal).

✗ Ovary and style villous. (Leaves glaucescent beneath).

Panicles tawny puberulous; pedicels thick, 1½-2 lin. long, puberulous, ... *X. eglandulosum*. Racemes slender, in lax tomentose panicles; pedicels slender, ... ... *X. glaucum*.

✗ ✗ Ovary glabrous, the style slender pubescent.

Panicle diffuse, greyish velvety; fruit glabrous; leaves glossy, drying yellowish like *Symplocos*, ... ... ... ... ... ... *X. flavescentia*.

\* \* Ovary shortly stalked.

Leaves rather large; racemes simple or in short robust axillary panicles, greyish velvety; ovary glabrous with a very thick villous style, ... ... ... ... *X. affine*.

1. *X. VIRENS*, Roxb. Corom. Pl. III. t. 284 and Fl. Ind. II. 221.

HAB. Not unfrequent in the evergreen tropical forests of the Pegu Yomah and Martaban, up to 3000 ft. elevation. Fl. Febr. March.

2. *X. FLAVESCENS*, Roxb. Fl. Ind. II. 222. (*X. paniculatum*, Miq. Suppl Fl. Sum. I. 393).

HAB. Frequent in the swamp-forests of Martaban; Tenasserim, Moulmein down to Tavoy; also Chittagong. Fl. Febr. May; Fr. May.

*X. flavescens* as revised in Hf. Ind. Fl. is a mixture of species, but it is impossible to clear up the synonymy so long as the numbers of distributed collections are not given. No one would wish the numbers of all collections extant or references to common and well-known species, but in the case of new or critical species such might reasonably be looked for. *X. angustifolium*, Wight Ill. 50 t. 23, with simple or almost simple subaxillary racemes and a villous stalked ovary, is certainly not identical with Roxburgh's plant; besides, it is a small tree or rather shrub, while the latter is a timber-tree.

3. *X. EGLANDULOSUM*, Griff. Not. Dicot. 537 t. 598 f. 4. (*X. Griffithii*, Hf. Ind. Fl. I. 210.)

HAB. Tenasserim, Mergui (Griff.; Helf.).

The leaves are described as very coriaceous just as those of *X. insignis* (to which I doubtfully refer Maingay's plant No. 348 distributed as *Carapa* sp.); if this be really so, I fear that I have not seen the true species, for in my specimens they are hardly more coriaceous than those of *X. flavescens*. The Andaman specimens in leaf only, wrongly named by me *X. glaucum*, would probably come here or be referable to *X. virens*.

4. *X. GLAUCUM*, Wall. Cat. 4199; Hf. Ind. Fl. I. 209.

HAB. Common in the swamp-forests and around inundated jungle-swamps of the alluvial plains and base of hills of Pegu and Martaban; also Tenasserim. Fl. March, Apr.

5. *X. AFFINE*, Benet in Hf. Ind. Fl. I. 209, vix Korth.

HAB. Tenasserim, Mergui.

Wall. Cat. 4198 is cited for this species, but the specimens B from Tenasserim as far as seen by me have a sessile ovary and are referred by me to *X. flavescens*, while A. from Penang is here understood to be the above plant.

### CARYOPHYLLEÆ.

#### Conspectus of genera.

*Trib. I SILENEÆ*. Calyx gamosepalous, 4- to 5-lobed. Petals and stamens hypogynous, often raised on a stalk-like torus. Styles distinct from the base. Stipules none.

1. *GYPSOPHILA*. Calyx turbinate-tubular or bell-shaped, broadly and almost wingedly 5-nerved. Capsule deeply 4-valved. Styles usually 2.

*Trib. II ALSINEÆ*. Sepals free. Stamens inserted on an annular disk, rarely perigynous. Styles free.

2. *BRACHYSTEMMA*. Petals entire. Capsules depressed, 1-seeded. Styles 2. Stipules none.

*Trib. III POLYCARPEÆ*. Sepals free. Stamens inserted on an annular disk. Styles united. Stipules scarious.

3. *DRYMARIA*. Petals lobed. Sepals not keeled. Style very short.

4. *POLYCARPON*. Sepals keeled. Petals entire. Style short.

5. *POLYCARPÆA*. Sepals not keeled, scarious. Petals entire or notched. Style elongate.

**Gypsophila, L.**

1. G. VACCARIA, Smith in Sibth. Fl. Græc. t. 380 ; WA. Prod. I. 42.  
*(Saponaria Vaccaria*, L. sp. pl. 583 ; Bot. Mag. t. 2290 Hf. Ind. Fl. I. 217 ;  
*Saponaria perfoliata*, Roxb. Fl. Ind. II. 445.)

HAB. South Andaman, in a cultivated field near Aberdeen, introduced.  
 Fl. May.

**Brachystemma, Don.**

1. B. CALYCINUM, Don Prod. Nep. 646; Fenzl. Atakt. t. 16 ; Hf. Ind. Fl. I. 937.

HAB. Ava, Khakyen hills, near Ponline (J. Anderson). Fl. March.

**Drymaria, Willd.**

1. D. CORDATA, Willd. ap. Roem. and Schult. syst. veg. V. 406 ; Hf. Ind. Fl. I. 244. (*Cerastium cordifolium*, Roxb. Fl. Ind. II. 458).

HAB. Rather frequent in hill-toungyas and betel-nut gardens of Martaban, at 2000 to 5000 ft. elevation ; also Ava, Bhamo. Fl. Febr. March.

**Polycarpon, L.**

1. P. LÆFLINGLE, Bth. and Hf. Gen. Pl. I. 153 ; Hf. Ind. Fl. I. 245.  
*(Pharnaceum depressum*, L. Mant. 564 ; *Læflingia Indica*, Retz. Obs. 48 ; Roxb. Fl. Ind. I. 165).

HAB. Very frequent in agrarian lands, banks of rivers, etc., of Pegu and Martaban ; also Tenasserim, Chittagong and Arracan. Fl. May, June.

**Polycarpaea, Lour.**

1. P. CORYMBOSA, Lamk. Ill. No. 2798 ; Wight Ic. t. 712 and Ill. II. t. 110 ; Hf. Ind. Fl. I. 245. (*Celosia corymbosa*, Roxb. Fl. Ind. I. 681 ; *P. marginata*, Prsl. Bot. Bemerk. 141 ; Walp. Ann. I. 83).

HAB. Ava, on limestone near Segain and Pagha myo ; Prome ; Tenasserim, Moulmein. Fl. Dec. Jan.

**PORTULACACEÆ.***Conspectus of genera.*

1. PORTULACA. Ovary half-inferior, with the petals and stamens perigynous.  
 2. TALINUM. Ovary free. Sepals usually deciduous. Seeds caruncled.

**Portulaca, L.***Conspectus of species.*

Joins glabrous ; flowers clustered by 3 to 5,	...	...	...	<i>C. oleracea</i> .
Joins pilose ; flowers solitary,	...	...	...	<i>C. quadrifida</i> .

1. P. OLERACEA, L. sp. pl. 638 ; Roxb. Fl. Ind. II. 463 ; Hf. Ind. Fl. I. 246 ; Sibth. Fl. Græc. t. 457 ; DC. Pl. grass. t. 123 ; Gray Gen. t. 99.

HAB. Common all over Burma in cultivated lands, waste places, on roads, etc. Fl.  $\infty$ .

2. P. QUADRIFIDA, L. Mant. 78; Roxb. Fl. Ind. II. 464; Wight Ill. II. t. 102; Hf. Ind. Fl. I. 247. (*C. meridiana*, L. Suppl. 248; Roxb. l. c. 463).

HAB. Pegu, in waste places, on roads, etc.; Ava. Fl. C. & R. S.

#### *Talinum*, Adans.

1. T. CUNEIFOLIUM, Willd. sp. pl. II. 864; Roxb. Fl. Ind. II. 465; Hf. Ind. Fl. I. 247.

HAB. Ava, on the Pagodas at Pagha myo (Wall. 6846).

#### *TAMARISCINEÆ*.

##### *Tamarix*, L.

###### *Conspectus of species.*

Leaves appressed to the terete almost simple branchlets and branches; flowers sessile, rose-coloured, in dense short spikes, ... ... ... ... *T. dioica*.

Leaves somewhat spreading on the very short thin and branched branchlets; flowers pedicelled, white, in loose slender terminal or variously lateral racemes, ... *T. gallica*.

1. T. DIOICA, Roxb. Fl. Ind. II. 101; Griff. Not. Dicot. 465, t. 577. f. 2.; Hf. Ind. Fl. I. 249.

HAB. Ava, in the hills opposite Pagha Myo. Fl. C. S.; Fr. R. S.

2. T. GALLICA, L. sp. pl. 386; Wight Ill. t. 24 f. 1.; Hf. Ind. Fl. I. 248. (*T. Indica*, Willd. in Act. Not. Cur. Berol. IV. 214; Roxb. Fl. Ind. II. 100).

HAB. Rather frequent in the tidal savannahs and tidal forests of Lower Pegu. Fl. R. S.; Fr. C. S.

#### *ELATINEÆ*.

###### *Conspectus of genera.*

*Trib. I BERGIEÆ*. Ovary-cells with several ovules. Albumen none. Perianth complete. Fruit a capsule.

1. BERGIA. Sepals acute. Flowers usually 5-merous. Capsule almost crustaceous, septicidal or septifragal.

*Trib. II. HIPPURIDEÆ*. (incl. *Callitrichæa*?). Ovary-cells with a solitary ovule. Perianth complete or incomplete. Seeds albuminous. Fruit a drupe.

2. MYRIOPHYLLUM. Calyx truncate or 4-toothed. Petals 2—4 or none. Stamens 2—3. Ovary deeply 2- or 4-sulcate; stigmas 2 or 4, blunt or feathery. Drupe separable into 2 or 4 nut-like carpels.

*Trib. III. CERATOPHYLLEÆ*. Flowers unisexual. Perianth 12-phylloous. Ovary 1-celled, with a solitary ovule. Fruit a nut.

3. CERATOPHYLLUM. Stamens several. Styles 2. Fruit a nut.

##### *Bergia*, L.

###### *Conspectus of species.*

Glabrous; flowers white, sessile, ... ... ... ... *B. verticillata*.

Pubescent or hirsute; flowers rose-coloured, shortly pedicelled, ... *B. ammannioides*.

1. B. VERTICILLATA, Willd. sp. pl. II. 770; Roxb. Fl. Ind. II. 456; Hf. Ind. Fl. I. 252. (*B. aquatica*, Roxb. Corom. Pl. II. t. 142).

HAB. Ava (Wall.); Pegu, Rangoon. Fl. R. S.; Fr. C. S.

2. B. AMMANNIOIDES, Roxb. Fl. Ind. II. 457; Hf. Ind. Fl. I. 251. (*Elatine ammannioides*, WA. Prod. I. 41; Wight Ill. t. 25. A. and Suppl. 48. t. 28.).

HAB. Frequent all over Pegu in rice-fields, along river-banks, etc.; Tenasserim, Tavoy (Wall.). Fl. R. S.; Fr. C. S.

### **Myriophyllum, L.**

#### *Conspectus of species.*

Carpels almost smooth, about  $\frac{1}{3}$  lin. long, only at base connate, the back obtuse, ... *M. tetrandrum*.

Carpels tubercled and muricate, sometimes almost echinate, wholly connate, about a line long, the back sharply angled, ... ... ... *M. tuberculatum*.

1. M. TETRANDRUM, Roxb. Fl. Ind. I. 451; DC. Prod. III. 69; W. A. Prod. I. 339; Miq. Fl. Ind. Bat. I. 634; Griff. Not. Dicot. 686. t. 644, f. 5.

HAB. Frequent in swamps and stagnant waters of the alluvial lands of Pegu; Chittagong, in ponds. Fl. Fr. Oct. to Jan.

2. M. TUBERCULATUM, Roxb. Fl. Ind. I. 471; DC. Prod. III. 69; Miq. Fl. Ind. I. 635. (*M. Indicum*, Griff. Not. Dicot. 687.)

HAB. Chittagong, in ponds. Fl. Fr. Oct.—Deeb.

### **Ceratophyllum, L.**

1. C. DEMERSUM, L. sp. pl. 1409; DC. Prod. III. 73; Bth. Fl. Austr. II. 491.

Var.  $\alpha$ . DEMERSUM, (*C. demersum*, L. l. c), nuts smooth.

Var.  $\beta$ . TUBERCULATUM, (*C. tuberculatum*; Cham. in Linnæa IV. 504. t. 5. f. 6. d.; WA. Prod. I. 309; Miq. Fl. Ind. Bat. I. 799; Wight Ic. t. 1948. f. 3.; *C. verticillatum*, Roxb. Fl. Ind. III. 624).

HAB. Only var.  $\beta$ . not uncommon in ponds and stagnant waters of Chittagong; also in choungs and lakes of Pegu. Fr. Deeb. Jan.

### **HYPERICINEÆ.**

#### *Conspectus of genera.*

Trib. I. HYPERICEÆ. Capsules dehiscing septicidally. Seeds not winged.

1. HYPERICUM. Flowers 5-merous. Herbs or shrubs.

Trib. II. CRATOXYLEÆ. Capsules dehiscing loculicidally or sometimes both loculicidally and septicidally. Seeds winged.

2. CRATOXYLON. Flowers 5-merous. Stamens 3-adelphous. Ovules 4 or more to the cell.

**Hypericum, L.***Conspectus of species.*

\* Shrubs with large flowers. Ovary 5-celled. Capsules 5-valved.

Stems terete or nearly so; styles 5, free, shorter than the ovary, ... *H. Leschenaultii*.

\* \* Herbs with small flowers. Ovary 3-celled. Capsules 3-valved.

Stems terete; sepals glandular-ciliate, ... ... ... *H. elodeoides*.

\* \* \* Herbs. Ovary 1-celled. Flowers small.

Stems 4-angular; sepals entire, ... ... ... *H. Japonicum*.

1. *H. LESCHENAUTII*, Chois in DC. Prod. I. 542; Deless. Icon. Select. III. 17. t. 27. (*H. triflorum*, Bl. Bydr. 142; *H. oblongifolium*, Hook. Bot. Mag. t. 4949; *H. Hookerianum*, WA. Prod. I. 99; Wight Ic. t. 949; Hf. Ind. Fl. I. 254).

HAB. Martaban, on and near the top of Nattoung, along the borders of the stunted hill forests, at 7000-7200 ft. elevation. Fr. March.

2. *H. ELODEOIDES*, Chois in DC. Prod. I. 551; Hf. Ind. Fl. I. 255. (*H. sp.* Griff. Not. Dicot. 569. t. 605, f. 1.)

HAB. Ava, (Griff.) Khakyen hills, Ponsee (J. Anderson). Fl. Aug. and March.

3. *H. JAPONICUM*, Thbg. Fl. Jap. 195. t. 31; Royle Ill. Him. Pl. t. 24. f. 2; Hf. Ind. Fl. I. 256.

HAB. Ava, Khakyen hills (J. Anderson); Martaban, Yoonzeleen, at 2500 ft. elevation (Brandis); Tenasserim (Helf. 837). Fl. March.

**Cratoxylon, Bl.***Conspectus of species.*

*Subg. 1. Tridesmis*, Spach. Petals furnished at base with a scale.

All parts glabrous, ... ... ... ... ... *C. formosum*.

Leaves beneath, pedicels and sepals pubescent, ... ... ... *C. pruniflorum*.

*Subg. 2. Ancistrolobus*, Spach. Petals without a basal scale.

\* Flowers in axillary poor cymes or solitary.

Leaves thin chartaceous, acute or blunt; hypogynous glands present or absent, ... ... *C. polyanthum*.

\* \* Flowers in terminal panicles.

Leaves linear-oblong, usually almost sagittate-produced at base, chartaceous, *C. nervifolium*.

Leaves more or less obovate-oblong, coriaceous, ... ... ... *C. arboreascens*.

I. *C. FORMOSUM*, Bth. and Hf. Gen. Pl. I. 166; Hf. Ind. Fl. I. 258. (*Tridesmis formosa*, Korth. in Verh. Nat. Gesch. Bot. 179. t. 37.)

HAB. Rare in the tropical forests of South Andaman. Fl. May.

2. *C. PRUNIFLORUM*, Kurz MS. in Journ. As. Soc. Beng. 1872. 293. (*Tridesmis pruniflora*, Kurz l. c.; *Elodea pruniflora* (errone *prunifolia*) Wall. Cat. 7276; *C. prunifolium*, Dyer in Hf. Ind. Fl. 258).

HAB. Not unfrequent in the Eng forests of Martaban; Ava, on Taong dong; Tenasserim, Moulmein. Fl. Apr. May.

Dyer has changed my name into "*prunifolium*," which was a *calami lapsus* on the part of Wallich who autographically corrected it on the label of the plant in H. B. C. into "*pruniflora*," a name at once more suggestive and appropriate, for the full-grown leaves are all but *Prunus*-like.

3. C. POLYANTHUM, Korth. Verh. Nat. Gesch. Bot. 175. t. 36; Miq. Fl. Ind. Bot. I/2. 516; Hf. Ind. Fl. I. 257.

Var.  $\alpha$ . GENUINUM, (var.  $\alpha$ . and  $\beta$ . Dyer in Hf. Ind. Fl. I. c.) hypogynous glands present.

Var.  $\beta$ . CARNEUM (*C. carneum*, Kurz in Pegu Report; *Ancistrolobus carneus*, Wall. ap. Voigt Hort. Calc. 89) hypogynous glands entirely absent.

HAB. Var.  $\beta$ . Rather frequent in the hill Eng and drier upper mixed forests of Martaban, up to 3000 ft. elevation; also Tenasserim (Helf. 843); var.  $\alpha$ . in Tenasserim and the Andamans. Fl. March, Apr. Fr. C. S.

The varieties of this species require re-examination. I believe there are at least two species, the one a tree, the other a shrub.

4. C. NERIIFOLIUM, Kurz in Journ. As. Soc. Beng. 1872. 293; Hf. Ind. Fl. I. 257.

HAB. Common in the dry and drier upper mixed forests of Prome and Pegu; also in Martaban and Tenasserim; Chittagong. Fr. C. S.

5. C. ARBORESCENS, Bl. Mus. Bot. II. 17; Hf. Ind. Fl. I. 258. (*Hypericum arborescens*, Vhl. Symb. II. 86. t. 43; *C. cuneatum*, Miq. Fl. Ind. Bot. I/2. 517 ?)

HAB. Tenasserim, Moulmein (Lobb).

### *GUTTIFERÆ.*

#### *Conspectus of genera.*

*Trib. I. GARCINIEÆ.* Stigma sessile or on a very short and thick style, peltate or radiately-lobed. Seeds often arillate.

1. GARCINIA. Flowers 4- or 5-merous. Sepals often decussate. Stamens united into a fleshy mass or into bundles, or free.

2. OCHROCARPUS. Calyx closed in bud, bursting into 2 valves.

*Trib. II. CALOPHYLLEÆ.* Style elongate, the stigma peltate or 4-cleft. Seeds without arillus.

3. CALOPHYLLUM. Ovary 1-celled, with a solitary ovule; style single, with peltate stigma.

4. KAYEA. Ovary 1-celled, with 4 ovules; style single, with a 4-cleft stigma.

5. MESUA. Ovary 2-celled, with 2 ovules in each cell; style single with a peltate stigma.

### *Garcinia, L.*

#### *Conspectus of species.*

*Subg. 1. Garcinia, L.* Flowers 4-merous.

\* Anthers oblong or ovate, opening by longitudinal slits or pores.

\* Stamens of male flowers in 4 bundles under the rudimentary ovary.

Berries 4- to 10-celled, the stigma radiating-lobed, smooth or nearly so.

Female flowers with staminods round the ovary; berries on a short peduncle; stigma radiately-lobed and adnate, ... ... ... ... *G. Mangostana*.

Female flowers without staminods; berries sessile; stigma large, peltate, slightly lobed, sessile, ... ... ... ... ... .. *G. cornea*.

Flowers on rather long pedicels, nearly 2 in. in diameter; stigma in male flowers large, peltate, entire, ... ... ... ... ... *G. speciosa*.

\* \* Stamens in 4 polyandrous bundles in a ring round the rudimentary ovary; stigma peltate, discoid, more or less rough from wrinkles or radiating veins. Ovary 2-celled.

Peduncle rather long, bearing 2 or rarely 1 leafy bract, ... ... *G. anomala*.

Peduncle short or wanting, without bracts, ... .. *G. Merguensis*.

\* \* \* Anthers almost sessile on a column or 4-sided fleshy mass seldom dividing into 4 somewhat distinct lobes. Stamens in female flowers in a single complete or interrupted ring. Stigmas tubercled or tubercled-wrinkled. Ovary 4—12-celled.

O Stigma in fruit raised on a short thick style.

Berry convex at top, the style not on a separate nipple, ... ... *G. cowia*.

Berry terminated by a nipple-shaped protuberance, ... ... *G. Kydia*.

O O Stigma in fruit quite sessile.

Leaves acuminate or cuspidate, leathery; flowers sessile, ... ... *G. lanceafolia*.

Leaves blunt, succulent when dry thin herbaceous; flowers pedicelled, ... *G. succifolia*.  
\* \* Anthers peltate, opening by a circular slit.

Leaves large, coriaceous; female flowers almost sessile, the stigma small, verrucose  
... ... ... ... ... ... *G. elliptica*.

*Subg. 2. Xanthochymus*, Roxb. Flowers 5-merous.

Pedicels about an in. long; flowers expanded, ... ... *G. Xanthochymus*.

Pedicels 3 to 4 lin. long; flowers almost closed, doubly smaller, ... *G. dulcis*.

\*1. *G. MANGOSTANA*, L. sp. pl. 635; Roxb. Fl. Ind. II. 618; Hook. Bot. Mag. t. 4847: Hf. Ind. Fl. I. 260.

HAB. Only cultivated, Tenasserim. Fr. May, June.

2. *G. SPECIOSA*, Wall. Pl. As. rar. III. t. 258; Hf. Ind. Fl. I. 260.

HAB. Frequent in the tropical forests of the Andamans; also Tenasserim, Moulmein district. Fl. Febr. Apr.

Wallich's figure above cited very much resembles *G. cornea*. My plants resemble in foliage much more *G. Mangostana*, from which they are readily distinguished by the entire but not lobed stigma of the male flowers. The flowers are very much larger than Wallich figures them, agreeing in size more with the analysed flower on the plate.

3. *G. CORNEA*, L. sp. pl. 561; Roxb. Fl. Ind. II. 629; Wight Ic. t. 105; Hf. Ind. Fl. I. 260.

HAB. Not uncommon in the tropical forests of Martaban and the

southern slopes of the Pegu Yomah above Rangoon; also Tenasserim. Fr. Begin of R. S.

The Burmese plants differ, as it seems constantly, in having the stigma 6-lobed and the ovaries 6-celled.

4. G. ANOMALA, Pl. and Trian. in Ann. d. sc. nat. Bot. ser. 4. XIV. 329; Hf. Ind. Fl. I. 266.

HAB. Not uncommon in the damp and dry hill-forests of Martaban E. of Tounghoo, at elevations from 4000 to 6000 ft. Fl. probably Apr. (buds in March).

5. G. MERGUENSIS, Wight Ill. 122. and Ic. t. 116; Hf. Ind. Fl. I. 267.

HAB. Tenasserim, Mergui (Griff.)

6. G. cowae, Roxb. Fl. Ind. II. 622. (*G. Roxburghii*, Wight Ic. t. 104).

HAB. Chittagong (Roxb.)

7. G. KYDIA, Roxb. Fl. Ind. II. 623; Wight Ic. t. 118. (*G. sp.* Griff. Not. Dicot. 609. t. 585. A. f. 12?).

HAB. Frequent in the moister upper mixed and in the tropical forests all over Burmah, from Chittagong, Pegu and Martaban down to Tenasserim and the Andamans. Fl. March to May; Fr. May June.

*G. lobulosa*, Wall. Cat. 4868 from Amherst is *G. Kydia*, the Singapore specimen is quite different but too incomplete for identification.

The Andamanese specimens called in my And. Report *G. purpurea*, will probably turn out to be the same as the Singapore plant, but they are too badly preserved to enable me to give a definite opinion.

8. G. LANCEÆFOLIA, Roxb. Fl. Ind. II. 623; Wight Ic. 163; Hf. Ind. Fl. I. 263.

HAB. Chittagong hills.

9. G. SUCCIFOLIA, Kurz in Journ. As. Soc. Beng. 1872. 293. (*G. loniceroides*, T. And. in Hf. Ind. Fl. I. 264).

HAB. Frequent in the swamp forests of the alluvial lands of the Sittang and Irrawaddi rivers. Fl. Apr.

10. G. ELLIPTICA, Wall. Cat. 4869; Wight Ill. I. 126 and Ic. t. 120. (*Garcinia heterandra*, Wall. Cat. 4856; Hf. Ind. Fl. I. 265).

HAB. Frequent in the tropical forests of the eastern slopes of the Pegu Yomah and Martaban down to Tenasserim, up to 3000 ft. elevation. Fr. Febr. March.

I consider *G. elliptica*, Wall. Cat. 4869 from Silhet identical with the *G. heterandra* of the same author, but other specimens distributed from the Kew Herbarium look different; in any case it cannot go into *G. Morella*. From the contradictory statements of authors with regard to Wallich's species, one is tempted to believe that much confusion must have occurred

in the distribution. We have in the H. B. C. at least two *Morellas*, the Hindustani one (*G. pictoria*, Roxb.) with a large conspicuous calyx under the fruit, and the Malacca one (Griff. 859) which has very minute sepals. *G. Choisyana*, Wall. ap. Hf. Ind. Fl. I. 268 from Tavoy, is known to me only from a wretched young leaf-branch and the description would agree so far with *G. elliptica* except in the sessile male flowers.

11. G. XANTHOCHYmus, Hf. Ind. Fl. I. 269. (*G. Roxburghii*, Kurz in Pegu Report; *Xanthochymus pictorius*, Roxb. Corom. Pl. 51. t. 196 and Fl. Ind. II. 633).

HAB. Frequent in the tropical forests of Martaban and Pegu; also Chittagong, Arracan and Tenasserim; Ava. Fl. March Apr.; Fr. R. S.

12. G. DULCIS (*Xanthochymus dulcis*, Roxb. Corom. Pl. III. t. 270 and Fl. Ind. II. 631; Bot. Mag. t. 3088; Wight Ic. t. 192).

HAB. Rather frequent in the tropical forests of South Andaman and adjacent islands. Fr. March-May; Fr. May, June.

#### Ochrocarpus, Thouars.

1. O. SIAMENSIS, T. And. in Hf. Ind. Fl. I. 270. (*Calyssaccion Siamense*, Miq. in Ann. Mus. Lugd. Bat. I. 209).

HAB. Rather rare in the Eng forests of Martaban; Prome hills (Wall. Cat. 4148, quoad specimen e Prome). Fl. Sept. Oct.

#### Calophyllum, L.

##### *Conspectus of species.*

\* Sepals 4, often the 2 inner ones or all petal-like; petals none.

Flowers about 8 lin. across, in peduncled or almost sessile umbel-like cymes... *C. spectabile*.

Flowers small; racemes short and strong, few-flowered, ... *C. amoenum*.

\*\* Sepals 4; petals 4 to 8.

Leaves at both ends acuminate, ... ... ... ... *C. polyanthum*.

Leaves rounded or retuse at the apex, ... ... ... ... *C. Inophyllum*.

1. C. SPECTABILE, Willd. Mag. Berl. 1811.80; Hf. Ind. Fl. I. 271. (*C. tetrapetalum*, Roxb. Fl. Ind. II. 608).

HAB. Not unfrequent in the tropical forests of the Andamans; also Tenasserim. (Falconer).

2. C. AMENUM, Wall. Cat. 4849; Planch. & Trian. in Ann. d. sc. nat. ser. 4. XV. 263.

HAB. Tenasserim, from Moulmein down to Tavoy. Fr. Febr.

3. C. POLYANTHUM, Wall. Cat. 4844; Pl. & Trian. in Ann. d. sc. nat. Bot. 4 ser. XV. 278; Hf. Ind. Fl. I. 274.

HAB. Not unfrequent in the damp hill forests of the Martaban hills, E. of Toungloo, at 3000 to 4000 ft. elevation.

4. C. INOPHYLLUM, L. sp. pl. 732; Wight Ic. t. 77, and Ill. Ind. Bot. Suppl. 35 t. 17; Roxb. Fl. Ind. II. 606; Hf. Ind. Fl. I. 273; Griff. Not. Dicot. 609. (*C. Bitangor*, Roxb. l. c. 607).

HAB. Frequent along the sandy sea-shores in the beach-forests of the Andamans and Tenasserim; also often cultivated in villages. Fr. Apr. May.

**Kayea, Wall.**

I. K. NERVOSA, T. And. in Hf. Ind. Fl. I. 277. (*Mesua nervosa*, Planch. & Trian. in Ann. d. sc. nat. Bot. ser. 4, xv. 307).

HAB. Tenasserim, Moulmein district (Falc.) down to Mergui (Griff.). Fr. Apr.

**Mesua, L.**

1. M. FERREA, L. sp. pl. 734; Wight Ic. t. 118; Roxb. Fl. Ind. II. 605; Hf. Ind. Fl. I. 277. (*M. speciosa*, Chois in DC. Prod. I. 562; Wight Spicil. 27. t. 30 and 31; and Ic. t. 961; *M. pedunculata*, Wight Ic. t. 119).

HAB. Frequent in tropical forests of the Andaman islands and all over Tenasserim; Chittagong. Fl. March; Fr. May, June.

**TERNSTRÆMIACEÆ.**

*Conspectus of genera.*

*Trib. I. TERNSTRÆMIACEÆ.* Anthers basifix. Fruit indehiscent. Seeds usually few. Albumen fleshy, usually scanty. Embryo curved, the cotyledons shorter than the radicle and nearly as broad.

1. ANNESLEA. Ovary half-immersed in the torus. Fruit inferior.  
2. TERNSTRÆMIA. Petals united at base. Anthers glabrous. Ovules 2 to 4 in each cell. Fruit superior. Seeds large.

3. ADINANDRA. As preceding, but anthers pilose. Seeds numerous, small.  
4. CLEYERA. Petals free or hardly united. Anthers pilose. Ovules many. Fruit superior.

5. EURYA. Flowers dioecious. Petals united at base. Anthers glabrous. Ovules many. Fruit superior.

*Trib. II. SAURAUJÆ.* Anthers versatile. Fruits usually pulpy, rarely almost dehiscent. Seeds numerous, small. Albumen copious. Embryo straight, the radicle longer than the cotyledons.

6. SAURAUJA. Flowers 5-merous, usually hermaphrodite. Styles 3—5.  
*Trib. III. GORDONIEÆ.* Anthers versatile. Fruit indehiscent or loculicidal. Albumen scanty or none, rarely copious. Embryo curved or straight, the cotyledons large, the radicle short.

✗ Fruit a dehiscent capsule.

7. SCHIMA. Sepals somewhat unequal. Seeds flat, winged. Radicle inflexed. inferior.

8. GORDONIA. Sepals very unequal. Seeds winged. Radicle superior.  
9. CAMELLIA. Sepals very unequal. Outer stamens monadelphous. Seeds few, large, not winged. Radicle superior.

✗✗ Fruit an indehiscent drupe.

10. PYRENARIA. Sepals very unequal. Seeds large. Cotyledons folded or convolute. Radicle inferior.

**Anneslea, Wall.***Conspectus of species.*

Leaves less coriaceous, bluntnish, the nerves distinct; peduncles slender, ... *C. fragrans*.  
 Leaves thick coriaceous, acute, nerves almost obsolete; peduncles very thick, *C. monticola*.

1. A. FRAGRANS, Wall. Pl. As. rar. I. 5. t. 5; Griff. Not. Dicot. 567. t. 585. A. f. 17; Hf. Ind. Fl. I. 280.

HAB. Not unfrequent in the Eng forests of Pegu and Prome, and more so in the hill Eng forests of Martaban up to 2000 ft. elevation; also Tenasserim, Moulmein. Fl. March, Apr.

2. A. MONTICOLA, Kurz in Journ. As. Soc. Beng. 1873, 59.

HAB. Not unfrequent in the drier hill forests of Martaban at 5000 to 7200 ft. elevation. Fl. Febr. March.

May possibly turn out to be a stunted hill-form of the preceding species.

**Ternstroemia, L. f.***Conspectus of species.*

\* Anthers apiculate.

Fruiting calyx smooth; berries about  $\frac{1}{2}$  in. thick, ... ... *T. Japonica*.

\* Anthers not apiculate.

Fruiting calyx thick and wrinkled; berries about 1— $1\frac{1}{2}$  in. thick, ... ... *T. Penangiana*.

1. T. JAPONICA, Thunbg. in Linn. Trans. II. 335; Hf. Ind. Fl. I. 280. (*Cleyera gymnanthera*, WA. Prod. I. 87; Wight Ic. t. 47; Bedd. Fl. Sylv. t. 9I.; *Ternstroemiacaea*, Griff. Not. Dicot. 568. t. 604. f. 1?).

HAB. Common in the damp hill-forests of Martaban at elevations from 3000 to 7200 ft.; Tenasserim, Moulmein. Fl. Apr.

2. T. PENANGIANA, Chois. in Mem. Soc. Phys. Genév. XIV. 108; Hf. Ind. Fl. I. 281. (*Erythrociton Wallichianum*, Griff. Not. Dicot. 565. t. 585. A. f. 7. *T. macrocarpa*, Scheff. Obs. Phyt. 15. & Tydschr. Ned. Ind. 1874. 60-61 in adn.).

HAB. Not unfrequent in the tropical forests of the Andamans; Tenasserim, from Moulmein to Mergui. Fr. Apr. May.

A more careful study of the *Ternstroemias* will probably shew the validity of Griffith's genus *Erythrociton*, a name already preoccupied. I am by no means sure that the Griffithian and Wallichian plants are the same. The Burmese specimens agree with the former. Dyer seems to have confounded two very marked species, viz., the wrinkled-sepalled Choisyan plant and the smooth-sepalled *T. coriacea*, Scheff. (Hb. Maingay No. 183 from Malacca).

**Adinandra, Jack.**

1. A. VILLOSA, Chois Mém. Ternst. 24; Hf. Ind. Fl. I. 283.

HAB. Not unfrequent in the open especially the Eng forests of the Irrawaddi zone, Pegu; Tenasserim, Tavoy (Wall.).

Seems to differ from *A. dasyantha*, Korth, with which I confounded it in my Pegu Report, by the acute sepals.

**Eurya, Thbg.**  
*Conspectus of species.*

\* Leaves serrulate.

✗ Leaf-buds quite glabrous.

Branchlets marked by decurrent prominent lines, ... ... *E. Japonica*:

✗ ✗ Leaf-buds pubescent or hirsute; branchlets terete.

A slender pine-like tree; leaves puberulous beneath, acuminate; styles united, *E. acuminata*.

A bushy round-headed tree; leaves membranous, glabrous or nearly so, bluish caudate; styles free, ... ... ... ... ... ... *E. serrata*.

\* \* Leaves entire or serrulate at apex only.

Young shoots appressed pilose; styles united, ... ... ... *E. symplocina*:

1. *E. JAPONICA*, Thbg. Fl. Jap. 191. t 25; Bedd. Fl. Sylv. t. 92; Hf. Ind. Fl. I. 284. (*E. Wightiana*, Wight Ill. I. t. 38; non Wall; *E. glabra*, Bl. Mus. II. 109; *E. virens*, Bl. l. c. 112; *E. obovata*, Bl. l. c. 107).

HAB. Frequent in the drier hill-forests of Martaban at 4000 to 7000 ft. elevation; Tenasserim, Moulmein hills. Fl. March.

2. *E. ACUMINATA*, DC. Mém. Ternstr. 26. (*E. Chinensis*, Hf. and Th. Herb. Ind. or, as far as to the specimens with united styles.)

HAB. Rather frequent in the drier hill-forests, especially the pine forests of Martaban at 6000 to 7000 ft. elevation. Fl. Febr.; Fr. Apr.

3. *E. SERRATA*, Bl. Mus. II. 115; Miq. Fl. Ind. Bat. I/2 474. (*E. lucida*, Wall. Cat. 1462; *E. Wallichiana*, Steud. ap. Miq. Fl. Ind. Bat. I/2. 474; *E. Roxburghii*, Wall. Cat. 1463).

HAB. Frequent in the tropical forests of Martaban up to 2000 ft. elevation; Tenasserim, as far South as Tavoy; Pegu, in the tropical forests on laterite above Rangoon. Fr. March.

4. *E. SYMPLOCINA*, Bl. Mus. Bot. II. 114; Hf. Ind. Fl. I. 284. (*E. Wallichiana*, Planch MS.).

HAB. Martaban, in the damp and drier hill forests on the Nattoung mountains at about 7000 ft. elevation. Fl. March.

**Sauraúja, Willd.**  
*Conspectus of species.*

\* Calyx densely setose or hispid. Ovary villous.

Flowers large, on short thick pedicels, clustered; leaves more or less spiny-serrate, ... *S. armata*,

\* \* Calyx smooth. Ovary glabrous.

Leaves pale or tawny mealy-puberous beneath; peduncles long and slender, scaly; styles 5, ... ... ... ... ... ... *S. Funduana*.

Adult leaves glabrous, except the puberulous midrib; peduncles short, scaly puberulous; stamens about 50; flowers lazuli-blue, ... ... ... *S. Roxburghii*.

As preceding, but leaves finely setose-serrate; stamens about 20; flowers said to be white, ... ... ... *S. tristyla*.

All parts except upper side of leaves covered with long tawny or brown spreading hairs; peduncles short but slender, rusty-hirsute, ... ... ... *S. macrotricha*.

1. *S. ARMATA*, Kurz in Journ. As. Soc. Beng. 1873. 59. (*S. cerea*, Griff. ap. Dyer in Hf. Ind. Fl. I. 288?).

HAB. Ava, Khakyen-hills, Ponsee (J. Anderson). Fl. Apr.

2. *S. PUNDUANA*, Wall. Pl. As. rar. II. 50; Hf. Ind. Fl. I. 287.

HAB. Not unfrequent in the tropical forests of Martaban at 2000 to 3000 ft. elevation; Ava, Khakyen hills, Ponsee (J. Anderson). Fl. Apr.

3. *S. ROXBURGHII*, Wall. Pl. As. rar. II. 40; Hf. Ind. Fl. I. 287. (*Ternstroemia serrata*, Roxb. Fl. Ind. II. 521).

HAB. Rather frequent in the tropical and damp hill forests along choungs of the Martaban hills, E. of Toungoo, at 2000 to 6000 ft. elevation; also Chittagong. Fl. Apr. May.

4. *S. TRISTYLA*, DC. Mém. Ternst. 31. t. 7.; Hf. Ind. Fl. I. 287. (*Ternstroemia bilocularis*, Roxb. Fl. Ind. II. 522?).

HAB. Tenasserim (Helf.)

Included on the authority of Dyer. Specimens thus named in HBC. hardly differ from the preceding.

5. *S. MACROTRICHA*, Kurz in Journ. As. Soc. Beng. 1873. 60; Hf. Ind. Fl. I. 287.

HAB. Ava, Khakyen hills, Ponsee (J. Anderson); Durunga, at 1000 ft. elevation (Griff.). Fl. Apr.

### Pyrenaria, Bl.

#### *Conspectus of species.*

\* Bracts large, leafy, dissimilar to the sepals.

Leaves yellowish in a dried state, pubescent beneath, ... ... ... *P. diospyricarpa*.

\* \* Bracts small, much shorter than the sepals and similarly shaped.

Leaves glabrous, yellowish in a dried state, petioles hardly 2 lin. long, puberulous or glabrous; fruits obovate, waxy-yellow, ... ... ... *P. camelliæflora*.

Leaves glabrous, in a dried state liver-coloured; petioles glabrous, 6 to 8 lin. long; fruits globular or elliptical, green, ... ... ... *P. serrata*.

1. *P. DIOSPYRICARPA*, Kurz in Journ. As. Soc. Beng. 1873. 60.

HAB. Not unfrequent in the stunted and drier hill-forests of Martaban, E. of Toungoo, at 6000 to 7200 ft. elevation. Fl. Fr. March.

2. *P. CAMELLIÆFLORA*, Kurz in Journ. As. Soc. Beng. 1871. 46; Hf. Ind. Fl. I. 290.

HAB. Frequent in the drier hill-forests of Martaban at elevations from 3000 to 5000 ft., rarely lower down. Fl. March Apr.; Fr. Apr. May.

3. P. SERRATA, Bl. Bydr. 1120; Miq. Fl. Ind. Bat. I/2. 493. (*P. attenuata*, Seem. in Bonpl. VII. 49; Linn. Trans. XXII. 340; Hf. Ind. Fl. I. 290.; *P. lanceolata*, T. and B. in Nat. Tydsch. Nat. Ver. Ned. Ind. XXV)

HAB. Tenasserim, Tavoy (Wall.)

**Schima, Bwdt.**

*Conspectus of species.*

- ✗ Peduncles usually very short and stout, usually not longer than the petioles.  
Peduncles short and straight (rarely long in Wall. Cat. 1455 fr. Nepal), usually lenticellate, rather strong, the nerves beneath prominent, the reticulation distinct, leaves glabrous or slightly pubescent beneath, ... ... ... Sch. Wallichii.  
Peduncles 1 in. long, lenticellate; leaves pubescent beneath; the nerves and net-venation prominent and distinct, ... ... ... Sch. mollis.  
Peduncles thick, lenticellate; leaves very coriaceous, glossy above, crenate, on both sides green, the net-venation indistinct, immersed, ... ... Sch. monticola.  
Peduncles short and straight, smooth; flowers larger than in *Sch. crenata*; leaves glaucous beneath, often entire, the lateral nerves prominent, the net-venation obsolete, ... ... ... Sch. Noronhae.  
✗ ✗ Peduncles elongate, and often slender, always much longer than the petioles, smooth.

- Peduncles slender, usually more or less curved; leaves glaucous beneath, usually crenate-serrate, the nerves and net-venation beneath distinct, ... Sch. oblata.  
Peduncles strong, but still slender, 1—1½ in. long; leaves very coriaceous, on both sides impressed-reticulate and almost rugulose, entire or crenate, the lateral nerves entirely or nearly impressed; capsules smaller, ... Sch. Bancana.

1. SCH. WALLICHII, Chois. (in Zoll. Cat. 144?). *Gordonia Wallichii*, DC. Prod. I. 528; *Gordonia integrifolia*, Roxb. Fl. Ind. II. 572).

HAB. Chittagong; Ava, Khakyen-hills, Ponsee (J. Anderson). Fl. March.

2. SCH. MOLLIS, Dyer in Hf. Ind. Fl. I. 288.

HAB. Ava, Taong-dong (Wall. Cat. 1458); Dyer gives Tavoy as a habitat, but this is an error. I fear that it is hardly more than a pubescent variety of the preceding.

3. SCH. MONTICOLA, Kurz MS.

HAB. Martaban, on the highest crests of the Nattoung mountains, in the stunted hill forests, at 6000 to 7200 ft. elevation. Fr. March.

May possibly be a hill-form of *Sch. Noronhae*, but looks very different even structurally. The leaves much resemble those of *Pygeum lucidum*.

4. SCH. NORONHAE, Rwdt. in Bl. Bydr. 129; Korth. Verh. 144. t. 29. f. 21—27; Miq. Fl. Ind. Bat. I/2. 492. (*Gordonia integrifolia*, Roxb. Fl. Ind. II. 572; *Gordonia floribunda*, Wall. Cat. 1457, B only.)

HAB. Frequent in the drier hill-forests of the Martaban hills at 1500 to 4000 ft. elevation, entering also the hill Eng-forests; Tenasserim (Helf. 763). Fl. Febr. March; Fr. March, Apr.

*Schima*, Griff. No. 768 has the peduncles of the above, but the leaves very much resemble those of *Sch. obliquata*, I think that they are abnormal and produced after an unusual fall of leaves.

5. SCH. OBLATA, Kurz in Journ. As. Soc. Beng. 1870. 65. (*Sch. crenata*, Korth. Verh. Nat. Gesch. 143. t. 29; Hf. Ind. Fl. I. 289; *Gordonia obliquata*, Roxb. Fl. Ind. II. 572).

HAB. Pegu, Rangoon ; Tenasserim (Helf. 763).

6. SCH. BANCANA, Miq. Ann. Mus. Lugd. Bat. IV. 413.

HAB. Tenasserim (Helf. 761) ; common in the Eng forests of the lower hills of Tenasserim and Martaban, also in the pine forests up to 3000 ft. elevation. (Dr. Brandis.)

The differences between the species of *Schima* are very slight, but the logical consequence of the reduction of any of the above forms would be such a combination as *Sch. Noronhae* and *Sch. Wallichii*.

### Camellia, L.

#### Conspectus of species.

Subg. 1. *Thea*, L. Stamens of inner series equal in number to the petals.

All parts quite glabrous ; flowers large ; leaves coriaceous, ... ... *C. Japonica*.

Subg. 2. *Camellia*, L. Stamens of inner series twice the number of the petals.

Young parts and midrib of the membranous leaves pilose ; flowers nodding on a line-long scaly peduncle ; filaments villous, ... ... ... *C. caudata*.

All parts glabrous ; leaves coriaceous ; peduncles not scaly ; filaments glabrous, ... *C. Thea*. Glabrous ; leaves coriaceous ; flowers almost sessile, erect ; filaments glabrous, *C. drupifera*.

\*1. C. THEA, Lk. in Stend. Nomencl. Bot. (*Thea Chinensis*, L. sp. pl. ed. 1. 515; Sims. Bot. Mag. t. 998; Seem. in Linn. Trans. XII. 349. t. 61; *Thea Bohea* and *T. viridis*, L. sp. pl. ed. 2. 735; *Thea Cochinchinensis*, Lour. Fl. Coch. I. 338; *C. theifera*, Griff. Not. Dicot. IV. 558. t. 601. f. 1 and 3 ; Trans. Agr. Hort. Soc. Bengal V. t. C.; Hf. Ind. Fl. I. 292).

HAB. Cultivated in Chittagong and Arracan.

2. C. CAUDATA, Wall. Pl. As. Rar. III. 336; Griff. Not. Dicot. 559. t. 601. f. 2 ; Trans. Agri. Hort. Soc. Ind. V. 1838 t. A.; Hf. Ind. Fl. I. 293.

HAB. Not unfrequent in the drier hill-forests of the Martaban hills along choungs, as for instance near the Chinchona plantation on Shan young gyee young at about 3500 ft. elevation. Fl. March ?

I fear that I am wrong in my identification and, unfortunately, the only two withered flowers met with by me have been lost by the glue-men. It has much larger and shorter acuminate leaves, and the habit of *C. assimilis* as figured by Seemann. It is a small tree with white wood. N. B. *C. Japonica*, L., is often met with in gardens of Europeans.

3. C. DRUPIFERA, Lour. Fl. Coch. I. 411; Seem. in Linn. Trans. XXII. 344; Hf. Ind. Fl. I. 293. (*C. Kissi*, Wall. in Asiat. Res. XIII.

429 and Journ. As. Soc. Beng. IV. 48. t. 2. and Fl. As. rar. III. 36. t. 256; *C. simplicifolia*, Griff. Not. Dicot. IV. 560. t. 604. f. 2).

HAB. Tenasserim (and Andaman islands ? ?) (Helf. teste Dyer).

### DIPTEROCARPEÆ.

#### *Conspectus of genera.*

*Subord. I. ANCISTROCLADEÆ.* Ovary 2-celled, with a single erect ovule; fruit adnate to the enlarged calyx. Scandent shrubs.

1. ANCISTROCLADUS. All the 5 calyx lobes more or less enlarged.

*Subord. II. DIPTEROCARPEÆ.* Ovary 3- rarely 1-celled, with 2 pendulous ovules in each cell. Trees, rarely erect shrubs.

\* Ovary inferior or nearly so, or with a broad base adnate to the calyx-tube: nuts therefore for  $\frac{1}{3}$  to  $\frac{2}{3}$  of their length adnate to the enlarged calyx tube.

2. ANISOPTERA. Connective terminating in a bristle or acute gland; 2 of the 5 calyx-lobes enlarging into long wings.

\* \* Ovary free, superior; nuts free, either enclosed in the enlarged calyx-tube or exposed and the calyx tube hardly enlarged.

O Calyx-tube in fruit very enlarged, completely enclosing the nut.

3. DIPTEROCARPUS. Two of the calyx lobes enlarging into long wings.

O O Calyx-tube in fruit not or almost not enlarged, the nuts either quite exposed or closely surrounded by the enlarged calyx-wings.

† Calyx-lobes valvate in bud.

4. PARASHOREA. Stamens 12—15, the connective mucronulate; calyx-lobes all almost equally enlarging and wing-like, stellately spreading, the nut quite exposed.

† † Calyx-lobes imbricate and usually also twisted in the bud.

✗ The 3 outer calyx-lobes in fruit longer than the 2 inner ones.

6. SHOREA. Corolla-lobes spreading; stamens 35—50 or more; anther-cells blunt, the connective terminating in a bristle or penicellate sharp point.

6. PENTACME. Corolla-lobes inflected at middle and forming a hemispherical closed cup leaving only an opening for the protruding anthers and style; stamens 15; anthers 4-celled, the cells bristly, diverging from the subulate-pointed connective (anthers therefore 5-setose).

✗ ✗ The outer calyx-lobes in fruit much longer than the 3 inner very small ones.

7. HOPEA. Stamens 15; anther-cells entire at top, adnate to the more or less prolonged connective.

✗ ✗ ✗ All the 5 calyx-lobes in fruit equally enlarged but not longer than the fruit itself.

8. VATICA. Stamens 15. Capsules by abortion 1- rarely 2-seeded.

#### *Ancistrocladus, Wall.*

#### *Conspectus of species.*

All the 5 lobes of the fruiting calyx equally enlarged, short and coriaceous, stellately spreading, leaves chartaceous, ... ... ... ... *C. Griffithii*.

Lobes of fruiting calyx unequal, chartaceous, 1—1½ in. long; leaves of a thicker texture, ... ... ... ... ... *C. Wallichii*.

1. A. GRIFFITHII, Planch. in Ann. d. sc. nat. ser. 3. XIII. 318; DC. Prod. XVI. 603; Hf. Ind. Fl. I. 300.

HAB. Common in the swamp-forests and along muddy river banks of Pegu and Martaban down to Tenasserim, chiefly in the alluvial plains. Fl. Fr. Apr. May.

2. A. WALLICHII, Planch. in Ann. d. se. Nat. 3 ser. XIII. 319; Hf. Ind. Fl. I. 300. (*A. extensus*, Wall. Cat. 1052; DC. Prod. XVI. 602; Hf. Ind. Fl. I. 299; *A. stelligerus*, Wall. ap. DC. Prod. I. e. 603?; *A.* sp. Griff. Nat. Dicot. 568.)

HAB. Frequent in the tropical forests of the Pegu Yomah and Martaban down to Tenasserim and the Andamans; also Chittagong. Fl. Febr. March; Fr. Apr. May.

The wings are described as subequal but all those that I saw were very unequal, and it is possible that *A. Wallichii* of Dyer is the same as *A. Griffithii*. At least several specimens of *A. stelligerus*, Wall. Cat. belong to the latter. Wallich's specimens 1052-2 in HBC. from Silhet, in very unripe fruit only, have the wings unequal. The plants are dimorphophyllous, having elongate leaves 1 to  $1\frac{1}{2}$  and 2 ft. long and others hardly 6 in. long on different branches of the same stock flowering at the same time. The panicles, too, vary from robust to slenderly-branched.

#### *Doubtful species.*

1. A. ATTENUATUS, Dyer in Hf. Ind. Fl. I. 300.

HAB. Tenasserim and Andaman islands (Helf. 724.)

The specimen in HBC. is in panicle less the flowers and fruits and has the habit of *A. Griffithii*; the fruits, however, as described by Dyer, agree with those ascribed by me to *A. extensus*.

#### *Anisoptera*, Korth.

##### *Conspectus of species.*

*Subg. 1. Synaptea.* Stamens only 15—18, the connective terminated in an acute gland; style filiform; nuts only to about  $\frac{1}{3}$  of their length adnate to the calyx-tube. Young shoots covered by a mealy or scurvy tomentum, ... ... *A. odorata*.

*Subg. 2. Anisoptera.* Stamens numerous, the connective produced into a bristle, style thick and ovoid; nuts inferior or nearly so.

Apparently quite glabrous, ... ... ... ... *A. glabra*.

1. A. ODORATA (*Sunaptea odorata*, Griff. Not. Dicot. 516. t. 685. A. f. 5; *Hopea grandiflora*, Wall. nom. nud.; DC. Prod. XVI. 634; *Synaptea grandiflora*, Kurz in Journ. As. Soc. Beng. XXXIX. 65; *Vatica grandiflora*, Dyer in Hf. Ind. Fl. I. 301).

HAB. Tenasserim, from Moulmein southwards, not unfrequent.

N. B. *Vatica faginea* Dyer in Hf. Ind. Fl. I. 301 from Mergui seems not to differ from the above as far as the description goes. *Hopea faginea* or, as it is marked in HBC., *Shorea Penangiana*, Wall. Cat. 963, is from Penang and a true *Anisoptera* with quite inferior fruit.

2. A. GLABRA, Kurz in Journ. As. Soc. Beng. 1873, 61; Hf. Ind. Fl. I. 301.

HAB. Frequent in the tropical forests of the eastern slopes of the Pegu Yomah and Martaban, E. of Toungloo. Fr. Apr. May.

3. A. OBLONGA, Dyer in Hf. Ind. Fl. I. 301.

HAB. Tenasserim, Mergui (Griff.). Unknown to me, said to differ from the preceding in the unequally prominent nerves of the calyx-wings.

### Dipterocarpus, Gærtn. f.

#### *Conspectus of species.*

\* Calyx-tube in fruit more or less globular, ovoid to turbinata, without any ribs or longitudinal wings on its belly.

O Calyx-tube in fruit towards the top produced into 5 compressed knobs each situated between 2 lobes.

Leaves glabrous or puberulous beneath; stipules puberulous, ... *D. tuberculatus.*

O O Calyx-tube in fruit perfectly terete.

✗ Leaves glabrous and glossy.

Stipules velvety; fruiting calyx smooth and more or less pruinous, ... *D. lavis.*

Stipules glabrous; fruiting calyx sprinkled with minute stellate hairs, ... *D. Hasseltii.*

✗ ✗ Leaves beneath or on both surfaces variously hairy.

Leaves acuminate, beneath along with the petioles pubescent, ... *D. turbinatus.*

All softer parts greyish pubescent, the leaves blunt, ... *D. obtusifolius.*

Leaves acuminate, often large; petioles, young branchlets and stipules strigose from short tawny brush-like fascicled hairs, ... *D. pilosus.*

\* \* Calyx-tube in fruit longitudinally marked by 5 ribs or as many wings.

† Wings of fruiting calyx-tube broad (about half as broad as the belly or broader).

Calyx greyish-tomentose, when in fruit sparingly stellate-puberulous; petioles long; leaves greyish pubescent, ... *D. alatus.*

Calyx pruinous, quite glabrous; petioles only 2—2½ in. long, ... *D. Griffithii.*

† † Wings of the fruiting calyx-tube narrow or reduced to ribs.

O Leaves blunt.

All softer parts greyish-villous, ... *D. incanus.*

O O Leaves acuminate.

Branchlets tomentose, the belly of the calyx narrowly 5-winged and sparingly hairy, ... *D. costatus.*

1. D. TUBERCULATUS, Roxb. Fl. Ind. II. 614 and Icon. ined. IX. t. 82; DC. Prod. XVI. 614; Hf. Ind. Fl. I. 297.

HAB. Forming the principal constituent of the Eng and hill Eng forests all over Ava, Prome, Pegu and Martaban down to Tenasserim; also Chittagong. Fl. Apr.; Fr. May.

2. D. LÆVIS, Ham. in Wern. Soc. Trans. VI. 299; DC. Prod. XVI. 607. (*D. turbinatus*, Roxb. Corom. Pl. III. 3. t. 213 and Fl. Ind. II. 612; *D. grandiflorus*, Griff. Not. Dicot. 515.)

HAB. Frequent all over Burma from Arracan, Pegu and Martaban down to Tenasserim. Fl. Apr.; Fr. May.

3. *D. HASSELTII*, Bl. Fl. Jav. Dipt. 22. t. 6; DC. Prod. XVI. 609.

HAB. In the tropical forests of the Andaman Islands and Tenasserim.

Differs from the preceding solely in the glabrous stipules and not-pruinous calyx-belly.

Maingay's Malayan plant No. 199 belongs here. Dyer (in Trim. Journ. Bot. 1874. p. 102) incorrectly refers the species to *D. trinervis*.

4. *D. TURBINATUS*, Gærtn. f. Fruct. III. 51. t. 588; DC. Prod. XVI. 607 quoad diagn. Ham.; Dyer. in Trim Journ. Bot. 1874. t. 143. f. 13.

HAB. Frequent in the tropical forests of the eastern slopes of the Pegu and Arracan Yomah and Martaban down to Tenasserim; also Chittagong. Fl. Apr.; Fr. May.

Fruits resemble those of *D. Hasseltii*, leaves those of *D. alatus*. Gærtner's figure is very characteristic, representing a not full-grown fruit.

5. *D. OBTUSIFOLIUS*, Teysm. in Miq. Ann. Mus. Lugd. Bat. I. 214; DC. Prod. XVI. 608; Hf. Ind. Fl. I. 895.

HAB. Common in the hill Eng forests of Martaban and in the Eng forests of the Prome District up to 1500 ft. elevation. Fl. March, Apr.; Fr. Apr. May.

6. *D. PILOSUS*, Roxb. Fl. Ind. II. 615; DC. Prod. XVI. 614; Hf. Ind. Fl. I. 296.

HAB. In the damp hill and tropical forests of the Martaban hills, E. of Toungoo down to Tenasserim, up to 3500 ft. elevation; also Chittagong, Mascal island (Roxb.).

7. *D. ALATUS*, Roxb. Fl. Ind. II. 614; DC. Prod. XVI. 611. (*D. incanus*, Dyer in Hf. Ind. Fl. I. 298, vix Roxb.).

HAB. Frequent in the tropical forests of Pegu and Martaban down to Tenasserim; also in Arracan. Fl. Apr. May; Fr. May.

8. *D. GRIFFITHII*, Miq. in Ann. Mus. Lugd. Bat. I. 213; Hf. Ind. Fl. I. 299.

HAB. In the tropical and moister upper mixed forests of the Andamans; Tenasserim, Mergui (Griff.). Fr. May.

9. *D. INCANUS*, Roxb. Fl. Ind. II. 615; DC. Prod. XVI. 614.

HAB. Chittagong. Fl. Nov. Dec.; Fr. Apr.

A very doubtful species which indeed comes very near to *D. alatus* according to the description, although it is not likely that Roxburgh should have named the same species twice over.

10. *D. COSTATUS*, Gærtn. Fruct. III. 50. t. 187; DC. Prod. XVI. 610. (*D. gonopterus*, Turcz. in Bull. Soc. Mosc. 1863. I. 576?; DC. Prod. XVI. 612?).

HAB. Frequent in the hill Eng forests of the Martaban hills and in Upper Tenasserim; up to 2000 ft. elevation. Fr. Apr.

Dyer correctly remarks that *D. costatus* in Gærtn. Fruct. is a bad

representation of *D. alatus*; but it is a faithful delineation of what I formerly identified (and I still believe correctly) with *D. gonopterus*, Turez. I have not seen *D. scaber*, Ham. which is described as clothed with fascicled brown hairs.

*Doubtful species.*

1. *D. VESTITUS*, Wall. Cat. 954; Hf. Ind. Fl. I. 295.

HAB. Tenasserim, Tavoy (Gomez).

Not seen by me but seems allied to, if not identical with, *D. turbinatus*, apparently differing by the calyx-lobes all short broadly deltoid (not 2-elongate).

2. *D. SCABER*, Ham. in Mem. Wern. Soc. VI. 300; Hf. Ind. Fl. I. 297.

HAB. Hills of southern Tippera (Ham).

3. *D. ANGUSTIFOLIUS*, WA. Prod. I. 84. (*D. costatus*, Roxb. Fl. Ind. II. 613).

HAB. Chittagong Hills.

*Parashorea, Kurz.*

1. *P. STELLATA*, Kurz in Journ. As. Soc. Beng. 1870, 66. (*Shorea stellata*, Dyer in Hf. Ind. Fl. I. 304).

HAB. Frequent in the tropical forests of Martaban; rather rare along the eastern slopes of the Pegu-Yomah, up to 1500 ft. elevation. Fl. March; Fr. Apr. May.

The generic distinctions of *Parashorea* do not consist in the development of the fruit-wings but in the aestivation of the calyx and the entirely exposed nut.

*Shorea, Roxb.*

*Conspectus of species.*

\* Inflorescence tomentose or velvety-pubescent.

✗ Leaves chartaceous, when full-grown glabrous or nearly so:

Shorter calyx-lobes in fruit acuminate; stamens c. 20—25, ... ... ... *S. obtusa*.

Shorter calyx-lobes in fruit blunt; stamens about 50, ... ... ... *S. robusta*.

✗ ✗ Leaves very coriaceous, appressed silvery beneath.

Incompletely known; leaves apparently persistent, ... ... ... *S. Helpferi*.

\*\* Inflorescence quite glabrous.

Calyx quite glabrous, ... ... ... ... ... *S. floribunda*.

- I. *S. OBTUSA*, Wall. Cat. 966; Bl. Mus. Lugd. Bat. II. 32. t. 8; Hf. Ind. Fl. I. 306.

HAB. Common in the Eng and hill Eng forests all over Burma from Ava, Prome and Martaban down to Tenasserim, up to 2000 ft. elevation. Fl. March; Fr. Apr. May.

2. S. ROBUSTA, Gærtn. Fr. III. 48 t. 186; Roxb. Corom. Pl. III. t. 212 and Fl. Ind. II. 615; Bedd. Fl. Sylv. Madr. t. 4.; Hf. Ind. Fl. I. 306.

HAB. Said to grow in Ava.

3. S. HELFERI (*Vatica Helperi*, Dyer in Hf. Ind. Fl. I. 302).

HAB. Tenasserim, Mergui (Griff. 716/1).

Referred here on account of habit.

There is another *Shorea*, in leaf only, very much resembling *Durio Oxyanus* from Tenasserim, Moulmein (Falc. 438), which differs from *Sh. leprosula* in having the upper side of the leaves not scabrous and generally in the different clothing and nervation.

4. SH. FLORIBUNDA, Kurz in Journ. As. Soc. Beng. 1873. 60; Hf. Ind. Fl. I. 304.

HAB. Tenasserim, Tavoy. Fl. Dech.

#### Pentacme, DC.

1. P. SIAMENSIS, Kurz in Journ. As. Soc. Beng. 1870, 66. (*Shorea Siamensis*, Miq. Ann. Mus. Lugd. Bat. I. 214; Hf. Ind. Fl. I. 384).

HAB. Very frequent in the Eng and dry forests more especially in Ava and the Prome district, less frequent from Pegu and Martaban down to Tenasserim. Fl. March; Fr. Apr. May.

The Siamese specimens have the young leaves beneath white-tomentose, but differ in no other respect.

#### *Hopea*, Roxb.

##### *Conspectus of species.*

\* Connective terminated by a short point.

Calyx greyish tomentose; leaves bluntnish acuminate, ... ... ... *H. odorata*.

Leaves oblong, blunt, ... ... ... ... *H. scaphula*.

\*\* Connective terminated by a bristle longer than the anther-cells.

Calyx greyish tomentose; flowers somewhat larger, ... ... ... *H. gratissima*.

Calyx almost glabrous; flowers very small, ... ... ... *H. Griffithii*.

1. H. ODORATA, Roxb. Corom. Pl. III. t. 210 and Fl. Ind. II. 609. Hf. Ind. Fl. I. 308. (*H. vasta*, Wall. ap. DC. Prod. XVI. 633).

HAB. Common in the tropical forests all over Burma from Chittagong and Martaban down to Tenasserim. Fl. March, Apr.; Fr. May, June.

NB. *Hopea eglandulosa*, Roxb. is a *Cyclostemon* and differs from the above by the white bark as indicated by Roxburgh himself.

2. H. SCAPHULA, Roxb. Fl. Ind. II. 611; DC. Prod. XVI. 635. (*Vatica scaphula*, Dyer in Hf. Ind. Fl. I. 301).

HAB. Chittagong, on Mascal Island (Roxb.). Fl. Jan.

3. H. GRATISSIMA, Wall. Cat. 960; Kurz in Journ. As. Soc. Beng. 1873. 61. (*H. oblongifolia*, Dyer in Hf. Ind. Fl. I. 309?; *Shorea gratissima*, Dyer l. c. 307).

HAB. Tenasserim (Griff. 714/1).

4. H. GRIFFITHII, Kurz in Journ. As. Soc. Beng., 1873, 60; Hf. Ind. Fl. I. 310.

HAB. Tenasserim, Mergui (Griff.). 717/1.

#### Vaticea, L.

1. V. LANCEÆFOLIA, Bl. Mus. Lugd. Bat. II. 31; DC. Prod. XVI. 618; Hf. Ind. Fl. I. 302. (*Vateria lanceæfolia*, Roxb. Fl. Ind. II. 601).

HAB. Chittagong (Roxb.); Burma (Griff.). Fl. May; Fr. Jul. Aug.

#### Doubtful species.

1. V. TRIGYNA, Griff. Not. Dicot. 514.

HAB. Tenasserim, Mergui, on the summit of the hillock Pator, at 600—800 ft. elevation (Griff.).

Griffith's description is a very complete and good one, but still I cannot guess the plant. The ovary-like style would indicate *Anisoptera*, but the ovary itself is stated to be superior and free.

#### MALVACEÆ.

##### Conspectus of genera.

A. Carpels whorled in a single row, not united into a capsule.

*Trib. I. MALVEÆ*. Staminal column bearing the filaments at the summit. Style-branches as many as cells to the ovary. Mature carpels separating more or less from the axis.

\* Ovules solitary, ascending.

✗ Stigmas linear.

1. ALTHÆA. Bracteoles 6—9, united at base; fruit-axis not longer than the carpels.

2. MALVA. Bracteoles 3, distinct. Carpels not beaked.

✗ ✗ Stigmas capitate or clavate.

3. MALVASTRUM. Bracteoles 1 to 3, distinct, or none. Carpels usually beaked.  
\* \* Ovules suspended, solitary.

4. ANODA. Bracteoles none. Carpels broadly stellate, not beaked.

5. SIDA. Carpels converging with their points or beaked. Bracteoles none, or very rarely 1 or 2 and bristle-like.

\* \* \* Ovules 2 or more, ascending or pendulous or both.

6. ABUTILON. Bracteoles none. Carpels 5—20, without spurious partitions.

*Trib. II. URENEÆ*. Staminal column truncate or 5-toothed at apex bearing the anthers or filaments on the outside. Style-branches twice as many as ovary-cells. Carpels 1-seeded.

7.URENA. Bracteoles 5, connate at base. Carpels opposite the petals, muricate or glochidiate.

8. PAVONIA. Bracteoles 5 or more, usually free, herbaceous or bristle-like. Carpels opposite the sepals, variously armed or smooth.

B. Fruit a capsule, dehiscent or rarely indehiscent.

*Trib. III. HIBISCEÆ.* Staminal column truncate or 5-toothed at summit, bearing the anthers or filaments outside or also on the summit itself. Style-branches or stigmas as many as ovary-cells.

O Style branched at the summit, the branches spreading or radiating.  
Seeds usually reniform.

9. *KYDIA.* Bracteoles 4—6, enlarging in fruit. Capsule 2- or 3-valved.  
10. *DECASCHISTIA.* Bracteoles 10. Ovary, 10-celled, with a solitary ovule in each cell.

11. *HIBISCUS.* Bracteoles 5 or more, free or connate, rarely tooth-like or wanting. Ovary 5-celled, with 2 or more ovules in each cell.

O O Stigmas clavate, undivided or very shortly and erect-branched. Seeds obovoid or angled.

12. *THESPESIA.* Bracteoles 3 to 5, usually small.

13. *GOSSEPIUM.* Bracteoles 3, leafy, large, cordate.

*Trib. IV. BOMBACEÆ.* Staminal column divided at summit, or rarely to the base, into numerous filaments or 5 to 8 staminal bundles, very rarely entire nearly to the summit. Anthers free or variously cohering. Stigmas free or connate.

\* Leaves digitate. Bracteoles distinct or none.

14. *BOMBAX.* Calyx truncate or irregularly 3- to 5-lobed. Capsule 5-valved, copiously woolly within. Ultimate filaments with a single anther.

15. *ERIODENDRON.* Calyx and capsule as in preceding. Filaments with 2 or 3 anthers.

\*\* Leaves simple, penninerved, beneath more or less lepidote. Fruits muricate.

16. *DURIO.* Calyx bell-shaped. Petals 5. Branches of the staminal bundles bearing several linear anthers with sinuous anther-cells.

#### *Althaea*, L.

1. A. *ROSEA*, Cav. Diss. t. 29. f. 3; Roxb. Fl. Ind. III. 180; DC. Prod. I. 437; Bot. Mag. t. 3189. (A. Coromandeliana, Cav. l. c. 293; WA. Prod. I. 45; A. flexuosa, Sims Bot. Mag. t. 892; A. Sinensis, Cav. l. c. t. 29. f. 3.; DC. l. c.).

HAB. In gardens both of natives and of Europeans, more especially in the drier districts, as Prome, also Ava, Khakyen hills, Ponsee (J. Anderson). Fl. March.

#### *Malva*, L.

1. M. *VERTICILLATA*, L. sp. pl. 970; Hf. Ind. Fl. I. 320; Engl. Bot. t. 2953; Hook. Journ. 1847. t. 7. (*M. Neilgherrensis*, Wight Ic. t. 950).

HAB. Ava, Khakyen hills, Ponsee (J. Anderson). Fr. May.

#### *Malvastrum*, A. Gray.

\*1. M. *TRICUSPIDATUM*, A. Gray Bot. Amer. Exp. I. 148; Hf. Ind. Fl. I. 321. (*M. ruderale*, Miq. Fl. Ind. Bat. 1/2 138).

HAB. In rubbishy places near Chittagong; also one specimen seen in Rangoon. Fl. R. S.

## Sida, L.

## Conspectus of species.

\* Leaves from lanceolate to oblong or obovate-oblong, on short 2 to 4 lin. long petioles.

Carpels usually 5, leaves more or less green on both sides; peduncles short, not or at the very base jointed, ... ... ... ... ... *S. carpinifolia*.

Carpels usually 10, seldom fewer, leaves minutely greyish tomentose beneath; peduncles usually elongate, jointed at about their middle, ... ... ... *S. rhombifolia*.

\*\* Leaves cordate or nearly so, on 6 to 15 lin. long, usually slender petioles.

O Carpels terminating in 2 long awns.

Erect, glabrous or nearly so, ... ... ... ... ... *S. corylifolia*.

Erect, densely tomentose, ... ... ... ... ... *S. cordifolia*.

O O Carpels blunt or shortly 2-lobed,

Erect; hairs glandular or viscid; flowers solitary or several, on short and rather thick glandular peduncles, ... ... ... ... ... *S. glutinosa*.

Spreading or almost erect, weak; hairs spreading, not glandular; flowers solitary, on long filiform jointed simply hairy peduncles, ... ... ... ... *S. humilis*.

1. *S. CARPINIFOLIA*, L. sp. pl. 963; Hf. Ind. Fl. I. 323. (*S. acuta*, Burm. Fl. Ind. 147; Roxb. Fl. Ind. III. 171; Wight Ic. t. 95; *S. lanceolata*, Roxb. l. c. 175).

HAB. Very frequent, especially in rubbishy places, in cultivated grassy lands, shrubberies, etc., all over Burmah; Andamans, introduced only. Fl. R. and C. S.

2. *S. RHOMBIFOLIA*, L. sp. pl. 961; Roxb. Fl. Ind. III. 176; Hf. Ind. Fl. I. 323.

Var. *a. LINNEANA*, Griseb. Fl. West. Ind. 74.

Var. *β. CANARIENSIS*, Griseb. l. c. 74. (*S. rhomboidea*, Roxb. Fl. Ind. III. 176; *S. rhombifolia* var. *3 rhomboidea*, Mast. in Hf. Fl. Ind. I. 324 pp.)

Var. *γ. RETUSA*, Griseb. l. c.; Mast. l. c. (*S. retusa* L. sp. pl. 961; Roxb. Fl. Ind. III. 175).

Var. *δ. ACUTA*; erect, branched; leaves oblong-lanceolate, acuminate, toothed; carpels 6—7, stellate pubescent, with 4 long awns.

Var. *ε. ALNIFOLIA* (*S. alnifolia*, Roxb. Fl. Ind. III. 174; WA. Prod. I. 58, an etiam L?; *S. Chinensis*, Roxb. l. c.; *S. microphylla*, Roxb. l. c. 170?; *S. Philippica*, DC. Prod. I. 462).

HAB. Very frequent in leaf-shedding forests and in cultivated lands all over Burma; var. *δ. Tenasserim.* Fl. Fr. C. and R. S.

3. *S. CORYLIFOLIA*, Wall. Cat. 1865; Hf. Ind. Fl. I. 324.

HAB. Ava, Segain (Wall.).

4. *S. CORDIFOLIA*, L. sp. pl. 961; Roxb. Fl. Ind. III. 177; Hf. Ind. Fl. I. 324; (*S. decagyna*, Schum. and Thon. Dansk. Vidensk. Selsk. Afsh. IV. 12; Walp. Rep. I. 315).

HAB. Not unfrequent on sandy soil chiefly, as well in the leaf-shedding forests as in shrubberies of the lower lands of Pegu and Arracan. Fl. Fr. Oct. Deeb.

5. *S. GLUTINOSA*, Roxb. Fl. III. 172. (*S. Mysurensis*, WA. Prod. I. 59; Hf. Ind. Fl. I. 322).

HAB. Frequent in the mixed and open forests all over Pegu and Martaban; also Tenasserim and Ava, Khakyen hills. Fl. Fr. Febr., May.

6. *S. HUMILIS*, Willd. sp. pl. III. 744; Roxb. Fl. Ind. Fl. I. 322.

HAB. Frequent all over Pegu, more especially in the Prome District, in leaf-shedding forests and rubbishy places; also Ava. Fl. Fr. Oct. March.

### **Albutilon, Gaertn.**

#### *Conspectus of species.*

\* Carpels more than 10, usually about 20.

Tomentum close and dense, without spreading hairs; capsule truncate, the carpel-points very short, ... ... ... ... ... A. *Indicum*.

Tomentum dense, intermixed with long spreading hairs; capsule at the top contracted and angular, the carpels not pointed, ... ... ... A. *graveolens*.

\*\* Carpels fewer than 10, usually 5 or 7.

Tomentum consisting of short glandular hairs, intermixed with long simple and spreading ones, ... ... ... ... ... A. *polyandrum*.

1. A. *INDICUM*, G. Don. Gen. Syst. I. 504; Wight Ic. t. 12; Hf. Ind. Fl. 325. non Miq. Fl. Ind. Bat. (*Sida Indica* L. sp. pl. 964; Roxb. Fl. Ind. III. 179; *Sida populifolia*, Roxb. Fl. Ind. III. 179; *Sida Asiatica*, L. sp. pl. 964; Roxb. Fl. Ind. III. 179; Hf. Ind. Fl. I. 326).

HAB. Frequent along road sides, around villages, along the banks of rivers, etc., all over Prome and Pegu; also Ava. Fr. Deeb. Jan.

2. A. *GRAVEOLENS*, WA. Prod. I. 56; Hook. Comp. Bot. Mag. I. t. 2; Hf. Ind. Fl. I. 327. (*Sida graveolens*, Roxb. Fl. Ind. II. 179; Bot. Mag. t. 4134).

HAB. In uncultivated places, amongst shrubbery etc., especially around villages in Pegu. Fl. CS.; Fr. H. S.

3. A. *POLYANDRUM*, Schlecht. in Link En. Hort. Berol. II. 264; Hf. Ind. Fl. I. 325. (*Sida polyandra*, Roxb. Fl. Ind. III. 173; *Sida Persica*, Burm. Fl. Ind. t. 47. f. 1; Cav. Diss. I. t. 4. f. 1).

HAB. Pegu (Brandis).

The Burmese plant differs chiefly in the more glandular pubescence and in having the carpels constantly by 7, not by 5.

#### *Doubtful species.*

1. *SIDÆ*, sp. Griff. Not. Dicot. 523.

HAB. Tenasserim, Moulmein, in jungles and along roads.

## \* Urena, L.

## Conspectus of species.

\* Capsules longer than the sepals, glochidiate and bristly tomentose,  
... *U. lobata*.

\* \* Carpels included in the calyx, smooth or net-veined.

O Petals 1½ to nearly 2 in. long, forming a large funnel-shaped corolla.

Leaves almost rotundate, very scabrous on both surfaces; flowers forming dense leafy terminal heads, ... ... ... ... ... *U. rigida*.

Leaves underneath softly tomentose, scabrous above, the lower ones usually lobed; flowers in loose spreading terminal racemes, ... ... ... *U. speciosa*.

O O Petals about 4 in. long, forming a rotate corolla; involucre longer than the calyx.

Flowers sessile or nearly so in the axils of the leaves, or along axillary short leafy branchlets, ... ... ... ... ... *U. repanda*.

1. *U. LOBATA*, L. sp. pl. 974; Roxb. Fl. Ind. III. 182; Bot. Mag. t. 3043; Griff. Not. Dicot. 522; Hf. Ind. Fl. I. 329. (*U. reticulata*, Cav. Diss. VI. 335 t. 183. f. 1.; *U. vininea*, Cav. l. c. t. 184. f. 1; *U. microcarpa*, DC. Prod. I. 441; *U. ribesia*, Sm. in Rees. Cycl. 37. No. 5; DC. l. c.; *U. Swartzii*, DC. l. c.; *U. scabriuscula*, DC. l. c.).

Var.  $\beta$ . *SINUATA* (*U. sinuata*, L. sp. pl. 974; Roxb. Fl. Ind. III. 182; Hf. Ind. Fl. I. 329).

Var.  $\gamma$ . *LANOSA*, leaves larger, usually with shorter lobes and less scabrous, sometimes almost softly tomentose; involucre and calyx rather flaccid, densely tomentose.

HAB. All three forms common, especially in uncultivated places, in shrubberies, toungyas, etc., but also in leaf-shedding forests all over Burma from Chittagong and Ava down to Tenasserim up to 3000 ft. elevation; Var.  $\alpha$ . rarer than  $\beta$ . and  $\gamma$ . Fl. Fr.  $\infty$ .

2. *U. RIGIDA*, Wall. Cat. 1929; Hf. Ind. Fl. I. 330.

HAB. Not uncommon in the open, especially the low, forests of Pegu and Martaban; also Tenasserim, chiefly on stiff clay and laterite. Fl. Oct. to Jan.

3. *U. SPECIOSA*, Wall. Pl. As. rar. I. t. 26.

HAB. Not unfrequent in the low and mixed forests all over Pegu; also Ava. Fl. Fr. C. S.

## Pavonia, Cav.

## Conspectus of species.

*Sect. 1. Lebretonia*. Bracteoles 5-6. Carpels indehiscent.

Flowers yellow; carpels muricate, ... ... ... ... ... *P. glechomifolia*.

*Sect. 2. Eupavonia*. Bracteoles 10 or more. Carpels dehiscent.

Flowers pink; carpels unarmed, the margins slightly but sharply produced, *P. zeylanica*.

1. *P. GLECHOMIFOLIA*, A. Rich. Fl. Abyss. I. 54.; Hf. Ind. Fl. I. 330. (*Lebretonia procumbens*, Wall. Cat. 1883; Wight Ic. t. 4).

HAB. Ava. Segain. (Wall.).

2. *P. ZEYLANICA*, Willd. sp. pl. III. 838; Roxb. Fl. Ind. III. 214; Hf. Ind. Fl. I. 331.

HAB. Banks of the Irrawaddi in Ava, apparently not unfrequent.—Fl. Fr. Sept.—Jan.

All the Burmese specimens seen by me (including *P. rosea*, Wall. Cat. 1887, with hairy carpels) belong to the above species, none to *P. odorata*, Willd., for which Masters gives Birma as a habitat.

#### *Kydia*, Roxb.

1. *K. CALYCINA*, Roxb. Corom. Pl. III. t. 215 and Fl. Ind. III. 188; Wight Ic. t. 879-880: Bedd. Fl. Sylv. t. 3.; Hf. Ind. Fl. I. 348. (*K. fraterna*, Roxb. Corom. Pl. III. t. 216 and Fl. Ind. III. 189).

HAB. Not uncommon in the mixed and open forests of Pegu and Prome; also Ava. Fl. Jan.; Fr. H. S.

There really may be two different species in India, the one with smaller smooth seeds, the other with larger furrowed seeds. The indument of the Burmese plants is much more floccose, the involucre-leaflets broader; seeds, unripe, appear smooth and smaller.

#### *Decaschistia*, WA.

##### *Conspectus of species.*

Leaves beneath shortly but densely whitish tomentose; involucre much shorter than the calyx, puberulous; petals about  $\frac{1}{2}$  in. long, ... ... *D. parviflora*.

All parts thickly tomentose; involucre nearly as long as the calyx, densely tomentose; petals nearly 2 in. long, ... ... ... *D. crassiuscula*.

*D. PARVIFLORA*, Kurz in Journ. As. Soc. Beng. 1870. 66.

HAB. Found in the adjoining Siamese province of Kanburi, most probably occurring also in Tenasserim. Fl. Fr. Apr. May.

1. *D. CRASSIUSCULA*, Kurz in Journ. As. Soc. Beng. 1873. 227.

HAB. Prome District (Col. Eyre).

Masters describes but does not name another large-flowered (flowers pink, 4 in. in diameter) species from Rangoon.

#### *Hibiscus*, L.

##### *Conspectus of species.*

A. Leaflets of involucre free, sometimes adnate to the calyx but not connate with one another, or altogether wanting.

*Subg. 1. Solandra*. Involucre wanting. Herbs with small flowers.

Flowers white, on long slender pedicels, usually forming terminal racemes, ... *H. Solandra*.

*Subg. 2. Hibiscus*. Calyx regular, not spathaceous, 5-cleft, more or less persistent, surrounded by a more or less persistent involucre, the leaflets of which are either quite free or sometimes adnate to the calyx.

\* Capsule rounded, obtuse or truncate.

O Capsules truncate, winged.

Velvety-pubescent; calyx and involucre tomentose; flowers large, yellow with a dark-purple eye, ... *H. vilifolius.*

- O O Capsules rounded or obtuse, not winged.

Capsules glabrous; flowers white, hardly an in. in diameter, the petals reflexed; scabrous herb, ... *H. micranthus.*

Capsules hirsute; all parts, also calyx and involucre densely scurfy tomentose; involucelle-leaflets 10; flowers large, white then rose-coloured; a large shrub, ... *H. mutabilis.*

As preceding, but all parts softly tomentose; involucre and calyx densely pubescent; involucelle-leaflets in Burm. spec. 7, linear (in Malayan 5, ovate-lanceolate), ... *H. venustus.*

\* \* Capsules acuminate or acute, not winged.

✗ Calycine lobes 1-3-nerved, without thickened margins.

† Leaves densely and softly tomentose.

All parts, also calyx and involucre densely tomentose; pedicels shorter than the peduncles; seeds pubescent, ... *H. panduriformis.*

† † Leaves glabrous or roughish puberulous.

△ Annual herbs. Flowers yellow with dark-purple eye.

Seeds tubercled; leaves glabrous; stem and petioles prickly, ... *H. procerus.*

Seeds smooth; all parts and more especially the calyx and involucre very tubercled-hispid, ... *H. diversifolius.*

Seeds smooth; young parts densely and shortly hispid; involucelle-leaflets puberulous or almost glabrous, ... *H. lunariifolius.*

△ △ Shrubs. Flowers from purple to rose-coloured and white.

Leaves glabrous, longer than the petioles.

Pedicels shorter than the petioles, ... *H. Syriacus.*

Pedicels elongate, longer than the petioles, ... *H. Rosa Sinensis.*

✗ ✗ Calycine lobes with a prominent midrib and (especially when in fruit) with thickened usually indurated borders.

O Involucre-leaflets bearing on the back an oblong or linear appendage.

△ Appendage of involucre-leaflets leafy, oblong; flowers pale sulphur with crimson eye.

Flowers about 2 in. in diameter, shortly peduncled; stipules lanceolate; stems stiff-hairy and usually prickly, ... *H. furcatus.*

Flowers about an in. in diameter, on long slender peduncles; stipules large, leafy, semi-lunar; stems prickly, ... *H. Surrattensis.*

△ △ Appendage of involucre-leaflets linear, rarely wanting.

Flowers white or pale-sulphur with a purple eye, or purple, the calyx-lobes without a gland on the midrib, ... *H. radiatus.*

O O Involucre-leaflets entire, without any appendage.

Calyx dry, horny in fruit, the lobes prickly ciliate, with a large gland on the midrib; seeds glabrous, ... *H. cannabinus.*

Calyx fleshy, red, the lobes without prickles, usually a little hairy but soon glabrescent; seeds shortly hispid, ... *H. Sabdariffa.*

*Subg. 3. Abelmoschus.* Calyx spathaceous, 5- rarely 3-toothed, deciduous, surrounded by a 5- to 20-leaved free often very deciduous involucre. Seeds glabrous.

✗ Involucre-leaflets short and small, deciduous already before opening of the flowers.

Flowers rather small, uniform white, ... *H. ficulneus.*

✗ ✗ Involucre-leaflets narrow linear, often numerous and long; flowers

- large, yellow with purple eye.  
 O Capsules short, 5-angled  
     † Involucre-leaflets about 10-12.  
 All parts minutely seabrous; peduncles about twice as long as the capsule, slender;  
     flowers about 1½ in. in diameter, .. . . . . *H. sagittifolius*.  
 All parts spreadingly setose; peduncles as long or shorter than the capsule, strong; flow-  
     ers 2 to 3 in. in diameter, .. . . . . *H. Abelmoschus*.  
     † † Involucre-leaflets 15 to 20.  
 Stems hirsute; leaves lobed, tomentose and sprinkled with stiff hairs; involucre-leaflets  
     rather persistent, .. . . . . *H. cancellatus*.  
     O O Capsule elongate-conical, 7-angular.  
 Involucre-leaflets 10; all parts slightly hairy, .. . . . . *H. esculentus*.  
     × × × Involucre-leaflets broad and leafy, usually large, 4 to 6; flowers  
     yellow with purple eye. Stems setose.  
     O Involucre-leaflets 4.  
 Leaves almost glabrous; involucre-leaflets glabrous, along the borders shortly tomentose,  
     .. . . . . *H. Manihot*.  
 Leaves beneath sprinkled with 3-forked short hairs; involucre-leaflets appressed pubes-  
     cent and setose-ciliate, .. . . . . *H. hostilis*.  
     O O Involucre-leaflets 6.  
 Leaves hirsute; involucre-leaflets sprinkled with long stiff hairs, .. . . . . *H. pungens*.  
 B. Leaflets of the involucre united up to the middle or at least at the base, sometimes form-  
     ing a cup-shaped involucre.  
*Subg. 4. Paritium.* Trees, shrubs or woody climbers.  
     \* Trees or erect shrubs. Seeds glabrous. Flowers large, yellow with pur-  
     ple eye.  
 Leaves deeply 3-lobed, .. . . . . *H. hastatus*.  
 Leaves not divided, entire or crenulate, .. . . . . *H. tiliaceus*.  
     \* \* Seeds woolly or pubescent.  
     † Woody climbers.  
 All parts velvety tomentose, leaves glabrescent above; involucre-leaflets 4-7, velvety,  
     .. . . . . *H. scandens*.  
     † † Trees.  
 All parts tawny setose; leaves entire, tawny tomentose; involucre-leaflets 10, hirsute,  
     .. . . . . *H. macrophyllus*.  
 1. *H. SOLANDRA*, L'Her. Stirp. I. 103. t. 49; Roxb. Fl. Ind. III.  
     197; Hf. Ind. Fl. I. 336.  
     HAB. Ava, Taong dong and Segain (Wall.)  
 2. *H. VITIFOLIUS*, L. Mant. 569; Roxb. Fl. Ind. III. 200; Hf. Ind.  
     Fl. I. 338. (*H. truncatus*, Roxb. Fl. Ind. III. 200).  
     HAB. Not uncommon along borders of fields, in shrubberies, rubbishy  
     places round villages, etc., also in the dry forests, all over Burma from Chit-  
     tagong and Ava down to Pegu. Fl. R. and C. S.; Fr. H. S.  
 3. *H. MICRANTHUS*, L. f. Suppl. 308; Hf. Ind. Fl. I. 335. (*H.*  
     *rigidus*, L. f. Suppl. 310; Roxb. Fl. Ind. III. 195.)  
     HAB. Ava, Pagha myo (Wall.).

\*4. *H. MUTABILIS*, L. sp. pl. 977; Roxb. Fl. Ind. III. 201; Bot. Reg. t. 589; Hf. Ind. Fl. I. 344.

HAB. Only cultivated in gardens.

5. *H. VENUSTUS*, Bl. Bydr. 71; Miq. Fl. Ind. Bot. I/2. 155.

Var.  $\beta$ . *BRANDISII*, involucre-leaflets constantly 7, narrow linear.

HAB. Upper Tenasserim, Doyoo Kyee Pass (Brandis). Fl. Fr. March.

6. *H. PANDURIFORMIS*, Burm. Fl. Ind. 151. t. 47. f. 2; Hf. Ind. Fl.

338. (*H. tubulosus*, Cav. Diss. III. 161. t. 68. f. 2; Roxb. Fl. Ind. III. 196).

HAB. Ava (Wall.); Prome, Meaday (R. Scott). Fr. Apr.

7. *H. PROCERUS*, Wall. Cat. 2692; Hf. Ind. Fl. I. 339.

HAB. Ava (Wall.).

8. *H. DIVERSIFOLIUS*, Jacq. Ic. rar. t. 551; Roxb. Fl. Ind. III. 208; Bot. Reg. t. 381; Hf. Ind. Fl. I. 339.

HAB. Ava (Wall.).

9. *H. LUNARIFOLIUS*, Willd. sp. pl. III. 811; Wight Ic. t. 6; Hf. Ind. Fl. I. 338. (*H. pruriens*, Roxb. Fl. Ind. III. 196; *H. racemosus*, Ldl. Bot. Reg. t. 917).

HAB. Ava, Segain and towards the Taong dong (Wall.).

\*10. *H. SYRIACUS*, L. sp. pl. 978; Roxb. Fl. Ind. III. 195; Bot. Mag. t. 83; Hf. Ind. Fl. I. 344. (*H. Storekii*, Seem. Flor. Vit. 17. t. 4.)

HAB. Occasionally cultivated by the Karen of Martaban.

\*11. *H. ROSA SINENSIS*, L. sp. pl. 977; Roxb. Fl. Ind. III. 194; Bot. Mag. t. 158; Bot. Reg. t. 1826; Hf. Ind. Fl. I. 344.

HAB. Much cultivated in native gardens and villages and occasionally seen in neglected lands round villages. Fl.  $\infty$ .

12. *H. FURCATUS*, Roxb. Fl. Ind. III. 204; Hf. I. 345. (*H. aculeatus*, Roxb. l. c. 206 teste Masters).

HAB. Ava, Irrawadi (Wall.); Arracan, frequent on the lower hills of Koladyne District. Fl. Octob.

13. *H. SURRETTENSIS*, L. sp. pl. 979; Roxb. Fl. Ind. III. 205; Bot. Mag. t. 1356; Wight Ic. t. 197; Hf. Ind. Fl. I. 334. (*H. heterophyllus*, Griff. Not. Dicot. 520.)

HAB. Frequent all over Burma and adjacent provinces, in the leaf-shedding forests, especially the low ones; also in savannahs and deserted tounggyas, etc. Fl. Fr. C. S.

*H. aculeatus*, Roxb. differs chiefly by the much smaller stipules which, however, pass into those of *H. Surrattensis*.

\*14. *H. RADIATUS*, Cav. Diss. III. 150. t. 54. f. 2; Bot. Mag. t. 1911; Roxb. Fl. Ind. III. 209; Hf. Ind. Fl. I. 335. (*H. sp. Furcaria*, Griff. Not. Dicot. 521).

Var.  $\alpha$ . corolla white or pale-sulphur with a purple eye.

Var.  $\beta$ . LINDLEYI (*H. Lindleyi*, Wall. Pl. As. rar. I. t. 4; Bot. Reg. t. 1395; *H. radiatus*, Bot. Mag. t. 5098 ?)

HAB. Much cultivated all over Burma from Chittagong and Ava down to Tenasserim, and often like wild in deserted toungyas. Fl. Fr. C. S.

\*15. *H. CANNABINUS*, L. sp. pl. 979; Roxb. Corom. Pl. II. t. 190 and Fl. Ind. III. 208; Hf. Ind. Fl. I. 339.

HAB. Cultivated in toungyas of Pegu and Martaban, and often as wild in deserted ones.

16. *H. SABDARIFFA*, L. sp. pl. 978; Hf. Ind. Fl. I. 340.

HAB. Much cultivated all over Burma from Chittagong and Ava down to Pegu, sometimes as wild in deserted toungyas. Fl. Fr. C. S.

\*17. *H. FICULNEUS*, L. sp. pl. 978; Hf. Ind. Fl. I. 340. (*H. prostratus*, Roxb. Fl. Ind. III. 208; *Abelmoschus ficulneus*, WA. Prod. I. 53; Wight Ic. t. 154; *H. strictus*, Roxb. I. c. 203).

HAB. Rarely cultivated in native gardens of Pegu.

18. *H. SAGITTIFOLIUS*, Kurz in Journ. As. Soc. Beng., 1871, 46. (*H. Abelmoschus*, var.  $\alpha$ . *multiformis*, Mast. in Hf. Ind. Fl. I. 342; *H. hastatus*, Cav. Diss. III. 144. t. 50 f. 1? non Linn. f.).

HAB. Ava, Meaong (Wall.); Pegu (Brandis). Fl. Sept.

19. *H. ABELMOSCHUS*, L. sp. pl. 980; Roxb. Fl. Ind. III. 202; Griff. Not. Dicot. 541?; Hf. Ind. Fl. I. 342. (*Abelmoschus moschatus*, Moench; Wight Ic. t. 399; *Abelmoschus pseudo-Abelmoschus*, Walp. Rep. I. 308).

HAB. Not unfrequent in the mixed, especially the upper-mixed, forests of Arracan and Pegu; also Tenasserim, Moulmein; Ava, Segain. Fl. Fr. Nov.—Jan.

20. *H. CANCELLATUS*, L. f. Suppl. 311; Roxb. Fl. Ind. III. 201; Hf. Ind. Fl. I. 342. (*Abelmoschus crinitus*, Wall. Pl. As. rar. I. 39. t. 44).

HAB. Not unfrequent in the dry forests of Prome and Ava; also in the low forests of the Irrawadi zone, Pegu. Fr. January.

Only the form figured by Wallich occurs in Burma, the other with overlapping leaf-bases, more obtuse lobes, and different tomentum seems to be restricted to Hindustan.

\*21. *H. ESCULENTUS*, L. sp. pl. 980; Cav. Diss. III. t. 61. f. 2; Hf. Ind. Fl. I. 343. (*Hibiscus longifolius*, Wild. sp. pl. III. 827; Roxb. Fl. Ind. III. 210).

HAB. Cultivated in Burma (accord. Revd. F. Mason).

\*22. *H. MANIHOT*, L. sp. pl. 980; Bot. Mag. t. 1702 and t. 3152; Hf. Ind. Fl. I. 341. (*H. pentaphyllus*, Roxb. Fl. Ind. III. 212; *Abelmoschus Manihot*, Walp. Rep. I. 311).

HAB. Rarely cultivated by natives in Pegu.

23. H. HOSTILIS, Wall. ap. Mast. in Hf. Ind. Fl. I. 342.

HAB. Not uncommon in the upper mixed forests of the Pegu Yomah; also Ava (Wall.) Fl. Fr. C. S.

24. H. PUNGENS, Roxb. Fl. Ind. III. 213; Hf. Ind. Fl. I. 341.

HAB. Upper mixed forests of the northern parts of the Pegu Yomah at about 1200 to 2000 ft. elevation. Fr. C. S.

\*25. H. HASTATUS, L. f. Suppl. 310 (non Cav.) (*H. tricuspidis*, Cav. Diss. III. 152. t. 55. f. 2; Roxb. Fl. Ind. III. 202; Hf. Ind. Fl. I. 344).

HAB. Rarely cultivated in gardens. Fl. R. S.

26. H. TILIACEUS, L. sp pl. 976; Roxb. Fl. Ind. III. 192; Hf. Ind. Fl. I. 343. (*Paritium tiliaceum*, A. Juss. in St. Hil. Fl. Bras. I. 198; Wight Ic. t. 7; Griff. Not. Dicot. 523.)

Var.  $\beta$ . TORTUOSUS, Mast. in Hf. I. c. (*H. tortuosus*, Roxb. Fl. Ind. III. 192; Bot. Reg. t. 232).

HAB. Common in the beach and tidal forests all along the shores from Chittagong down to Tenasserim and the Andamans, ascending the rivers as far as the tidal waves. Fl. Fr.  $\infty$ .

27. H. MACROPHYLLUS, Roxb. Hort. Beng. 1814. 51; Wall. Pl. As. rar. I. 44. t. 51; Hf. Ind. Fl. I. 337. (*H. vulpinus*, Rwdt. Cat. Buitenz. 88; Miq. Fl. Ind. Bat. I/2. 157; *H. spathaceus*, Bl. Bydr. 72; *H. setosus*, Roxb. Fl. Ind. III. 193.)

HAB. Frequent in the tropical forests all over Burma from Chittagong and Martaban down to Tenasserim. Fl. Fr. R. S.

If the principle of the priority of the name first accompanied by a description be adhered to, Blume's name will have to be adopted. Unlike Wallich, Roxburgh described and figured the plants that he named, and unfortunate circumstances beyond his control and finally death prevented their publication: hence I consider that his *Hortus Benghalensis* claims priority.

28. H. SCANDENS, Roxb. Fl. Ind. III. 200; Hf. Ind. Fl. I. 337.

HAB. Frequent in the tropical forests of Martaban. Fl. Fr. March, Apr.

### Thespisia, Corr.

#### *Conspectus of species.*

All younger parts and unripe capsules covered with rusty coloured scales; leaves glabrous; a tree, ... ... ... ... ... ... *T. populnea*.

All younger parts and usually the leaves beneath shortly stellate tomentose; unripe capsules densely hirsute, a meagre shrub, ... ... ... *T. Lampas*.

1. TH. POPULNEA, Corr. Ann. Mus. IX. 290; Wight Ic. t. 8; Hf. Ind. Fl. I. 345; Bedd. Fl. Sylv. t. 63. (*Hibiscus populneus*, Roxb. Fl.

Ind. III. 190; *Hibiscus populneoides*, Roxb. l. c. 191; *Thesp. macrophylla*, Bl. Bydr. 73; Miq. Fl. Ind. I/2. 151).

HAB. Common in the beach and tidal forests all along the shore from Chittagong down to Tenasserim and the Andamans; Ava, Bhamo and Sabado (J. Anderson). Fl. Sept. Fr. March, May.

The occurrence of this saltloving tree in Ava is unique and requires explanation. Brine springs are numerous in Prome and Ava, and may possibly account for such an exceptional re-appearance of a sea-shore plant in the interior of Burma.

2. TH. LAMPAS, Dalz. in Dalz. and Gibs. Bombay Fl. 19; Hf. Ind. Fl. I. 345. (*Hibiscus Lampas*, Cav. Diss. III. 154. t. 56. f. 2; Roxb. Fl. Ind. III. 197; Wight Ic. t. 5; *H. tetralocularis*, Roxb. l. c. 198?; *Azantha Zollingeri*, Alef. in Bot. Zeit. 1861. 298).

HAB. Frequent in all leaf-shedding forests, especially the mixed ones, also in savannahs; all over Burma. Fl. Fr. C. & H. S.

### Gossypium, L.

#### *Conspectus of species.*

Annual; seeds free, clothed with firmly adhering silky down, ... *G. herbaceum*.

Shrubby; perennial; seeds black, free or cohering, devoid of adhering pubescence,

.. *G. Barbadense*.

\*1. G. HERBACEUM, L. sp. pl. 975; Roxb. Fl. Ind. III. 184; Royle Ill. Him. Pl. 98. t. 23. f. 1; Wight Ic. t. 10; Hf. Ind. Fl. I. 346.

Var.  $\alpha$ . HERBACEUM, (*G. herbaceum*, L. l. c.; *G. hirsutum*, Roxb. Fl. Ind. III. 187; *G. Barbadense*, Wight Ill. t. 28/c.) lobes of leaves acuminate. Var.  $\beta$ . *hirsutum*. Mast. in Hf. l. c. (*G. hirsutum*, L. sp. pl. 975; DC. Prod. I. 456; *G. obtusifolium*, Roxb. Fl. Ind. III. 183; *G. herbaceum*, Wight Ic. t. 9.), leaves with usually blunt lobes, the upper ones often undivided, with or without a gland on the midrib beneath; involucro-leaflets entire or serrate; capsules when ripe green; cotton white.

HAB. Var.  $\alpha$ . and  $\beta$ . much cultivated all over Burma, and often seen as wild in deserted toungyas and neglected lands. Fl. Fr. C. and H. S.

\*2. G. BARBADENSE, L. sp. pl. 975; Roxb. Fl. Ind. III. 187; Hf. Ind. Fl. I. 347. p. p.

HAB. Rarely seen in gardens in Pegu.

### Bombax, L.

#### *Conspectus of species.*

Leaflets on a 10 to 12 lin. long petiolule; staminal bundles consisting of 15 to 20 strong and thick filaments, ... ... ... ... *B. Malabaricum*.

Leaflets decurrent on the short 2 to 3 lin. long petiolule; staminal bundles consisting of 50 or more long filiform filaments, ... ... ... .. *B. insigne*.

1. B. MALABARICUM, DC. Prod. I. 479; Bedd. Fl. Sylv. Madr. t. 82; Hf. Ind. Fl. I. 249. (*Salmalia Malabarica*, Schott. Melet. 35; *B. heptaphylla*, Cav. Diss. V. 296; Roxb. Corom. Pl. III. t. 247 and Fl. Ind. III. 167; Wight Ill. t. 29. a. b.).

HAB. Frequent in all leaf-shedding forests, especially the mixed ones, all over Burma from Chittagong and Ava down to Tenasserim. Fl. H. S. Fr. C. S.

2. B. INSIGNE, Wall. Pl. As. rar. I. 71. t. 79 and 80; Hf. Ind. Fl. I. 349.

HAB. Frequent in the upper mixed forests of the Pegu Yomah and the Andamans; also Ava. Fl. H. S. Fr. C. S.

#### **Eriodendron, DC.**

1. E. PENTANDRUM (*Bombax pentandrum*, L. sp. pl. 989; Cav. Diss. V. 293. t. 151; Roxb. Fl. Ind. III. 165; *E. anfractuosum*, DC. Prod. I. 479; Wight Ic. t. 400; Griff. Not. Dicot. 533; Hf. Ind. Fl. I. 350).

HAB. Rare (one tree only seen) in the coast forests of South Andaman; here and there cultivated in Pegu and Tenasserim.

One of those trees that are stated to be very frequent in the Indian jungles, but I myself have never succeeded in seeing it in a truly wild state, although the loftiness of the tree and the decussate ternation of its branches would render it recognizable from a long distance.

#### **Durio, L.**

1. D. ZIBETHINUS, L. sp. pl. 698; Koen. in Trans. Linn. Soc. VII. 266; t. 14—16; Roxb. Fl. Ind. III. 399; Griff. Not. Dicot. 528. t. 596; Hf. Ind. Fl. I. 351.

HAB. Tenasserim. Fr. May, June.

Helper writes in his second report on the resources of Tenasserim: "This tree does not grow so far north as Moulmein, some few trees excepted which are grown as a rarity on the island of Beloo. Its sphere begins at Tavoy; large plantations occur to the E. of Mount Burney, and very fine specimens in the valley of Taunbiaun. Lower down on the Tenasserim, the tree begins to grow almost spontaneously, and in lat. 14° it forms large forests."

The Burmese specimens in Dr. Brandis' herbarium, although destitute of corolla, do not differ from the Malayan durian, and the calyx is the same in size as well as in shape.

#### **STERCULIACEÆ.**

##### *Conspectus of species.*

*Trib. I. STERCULIEÆ.* Flowers unisexual or polygamous. Petals none, Anthers 5-15, sessile, surrounding the stalked ovary or in males the top of a shorter or longer column, or shortly polyadelphous. Mature carpels distinct, sessile or stalked.

\* Anthers irregularly clustered, numerous. Fruit dehiscent.

1. *STERCULIA*. Ovules 2 or more in each cell. Carpels follicular.

\* \* Anthers 5, in a ring. Carpels indehiscent.

2. *HERITIERA*. Ovules solitary. Carpels often of a firm texture.

*Trib. II. HELICTERÆ*. Flowers hermaphrodite. Petals deciduous. Anthers 5-15, sessile or on short filaments, situated on the margin of the cup-like dilated summit of the column and usually alternating with staminods.

3. *HELICTERES*. Anther-cells divaricate or confluent into one. Fruit a capsule, sometimes twisted. Seeds not winged.

4. *PTEROSPERMUM*. Anther-cells parallel. Capsule woody, terete or 5-angular. Seeds winged.

*Trib. III. ERIOLÆNEÆ*. Flowers hermaphrodite. Petals deciduous. Anthers numerous on the outside of the tubular or conical column from the middle to the top. Staminods none.

5. *ERIOLÆNA*. Capsules woody, 5-valved.

*Trib. IV. DOMBEYEÆ*. Flowers hermaphrodite. Petals usually persistent, flat. Anthers 10 to 20, rarely 5, united into a short cup at or near the top of the column, the cells parallel. Staminods 5 or none.

✗ Anthers 15, rarely 10.

6. *PENTAPETES*. Bracteoles caducous. Sepals herbaceous. Ovary-cells with several ovules. Style simple.

✗ ✗ Anthers 5.

7. *MELHANTIA*. Bracteoles 3, persistent. Stamens united into a cup, with 5 intervening elongate staminods.

*Trib. V. HERMANNIEÆ*. Flowers hermaphrodite. Petals marcescent, flat. Stamens 5, shortly united or rarely tubular at base only. Staminods usually none.

✗ Ovary 5-celled.

8. *MELOCCHIA*. Capsules almost globular. Seeds wingless. Herbs or undershrubs.

9. *VISENIA*. Capsules deeply 5-lobed. Seeds winged at their extremities. Trees.

✗ ✗ Ovary 1-celled

10. *WALTHERIA*. Calyx campanulate. Staminods none.

*Trib. VI. BUETTNERIEÆ*. Flowers hermaphrodite. Petals concave at base, usually appendaged at top. Anthers 5-15, rarely numerous, introrse, the filaments united into a shorter or longer tube, solitary or in groups alternating with the staminods.

O Anthers by 2-4 alternating with a staminod.

11. *ABROMA*. Petals with a clawed ovate blade. Capsule 5-winged.

12. *GUAZUMA*. Petals clawed, with a linear 2-cleft blade. Fruit globular, woody tubercled.

13. *LEPTONYCHIA*. Petals concave, not clawed. Filaments long, only at base connate, alternating by 2 with the short staminods, at the back augmented by a series of subulate staminods.

O O Anthers singly alternating with the staminods.

14. *BUETTNERIA*. Petals cucullate at the clawed base. Staminods short and blunt. Capsules woody, variously armed.

### Sterculia, L.

#### *Conspectus of species.*

*Subg. 1. Sterculia*. Seeds without wings, 2 or more along the suture of the coriaceous carpels, never inserted at the base.

\* Leaves digitate.

- Leaves glabrous; calyx rather large, the lobes spreading, ... *St. fætida*.  
 Leaves canescent tomentose beneath; calyx small, the lobes connivent, short, ... *St. versicolor*.

\* \* Leaves palmately lobed or cut. Leaf-shedding trees.

- Carpels densely covered with stiff fragile hairs; flowers small, ... *St. urens*.  
 Carpels shortly tomentose from stellate hairs, .. ... *St. villosa*.  
 Carpels densely covered with stiff short hairs, glabrescent; flowers nearly  $\frac{3}{4}$  in. in diameter, ... *St. ornata*.

\* \* \* Leaves all entire. Small evergreen trees or meagre shrubs.

O Leaves quite glabrous.

X Calyx-lobes not spreading, almost erect or more usually connivent with their tips.

- Calyx shortly tubular, striate, the lobes of the length of the tube, ... *St. longifolia*.

X X Calyx almost rotate.

- Calyx lobes from a broader base linear, very long and somewhat twisted, ... *St. coccinea*.

O O Leaves more or less tomentose or puberulous, at least beneath.

X Flowers more than  $\frac{1}{2}$  in. long, in simple brown tomentose racemes.

- Leaves beneath and petioles softly rusty pubescent, ... *St. rubiginosa*.

X X Flowers in panicles.

- Leaves tomentose; calyx-lobes free and spreading; flowers long-pedicelled, ... *St. angustifolia*.

- Leaves beneath minutely stellate-puberulous; calyx-lobes short and connivent; flowers shortly pedicelled, ... ... ... *St. parviflora*.

*Subg. 2. Firmiana*. Calyx tubular. Seeds without wings. Carpels chartaceous and expanded leaflike, bearing 1 or 2 seeds along the marginal sutures at about  $\frac{1}{2}$  of their length.

Leaves more or less lobed, occasionally almost entire, glabrous or puberulous beneath; calyx about 8-9 lin. long, ... ... ... *St. colorata*.

Leaves very large, much lobed, pubescent beneath; calyx about 1 to  $1\frac{1}{2}$  in. long, ... *St. fulgens*.

*Subg. 3. Scaphium*. (incl. *Pterocymbium* and *Carpophyllum*). Calyx more or less campanulate. Seeds without wings, solitary, laterally adnate to the base of the boat-shaped chartaceous or membranous follicles.

\* Follicles produced below at about the middle into an additional bluish sac-like lobe.

Leaves more or less tomentose or puberulous beneath; calyx campanulate, green, ... *St. campanulata*.

\* \* Follicles not produced into an additional lobe.

Leaves coriaceous, glabrous, glossy; calyx almost rotate, yellowish, ... *St. scaphigera*.

*Subg. 4. Pterygota*. Seeds numerous, winged along their upper end, enclosed in a woody large follicle.

Leaves entire, glabrous, 5-nerved at base; follicles as large as the fist, ... *St. alata*.

I. *St. FETIDA*, L. sp. pl. 1431; Roxb. Fl. Ind. III. 154; Wight Ic. t. 181 and 364; Hf. Ind. Fl. I. 354.

HAB. Not unfrequent in the upper mixed forests of the Pegu Yomah. Fl. Apr. May; Fr. Febr. March.

2. ST. VERSICOLOR, Wall. Pl. As. rar. I. 48. t. 59; Hf. Ind. Fl. I. 355.

HAB. Ava, on limestone hills on the right side of the Irrawaddi near Segain (Wall.) Fl. Octob.

3. ST. URENS, Roxb. Corom. Pl. I. t. 24 and Fl. Ind. III. 145; Hf. Ind. Fl. I. 355.

HAB. Not unfrequent in the drier upper mixed forests of the Pegu Yomah and Martaban; and in the mixed dry forests of Prome; also Tenasserim. Fr. March.

4. ST. VILLOSA, Roxb. Fl. Ind. III. 153; Hf. Ind. Fl. I. 355.

HAB. Frequent in the upper mixed forests of the Pegu Yomah and Martaban; Tenasserim; Andamans. Fl. H. S.; Fr. Begin of R. S.

5. ST. ORNATA, Wall. ap. Voigt Hort. Cale. 105; Kurz in Journ. As. Soc. Beng. 1873. 228.

HAB. Not unfrequent in the tropical forests of the Pegu Yomah and Martaban down to Tenasserim. Fl. Febr.; Fr. March, Apr.

6. ST. LONGIFOLIA, Vent. Malm. II. No. 91. in adnot.; DC. Prod. I. 482; Miq. Fl. Ind. Bat I/2. 173. (*St. striatiflora*, Mast. in Hf. Ind. Fl. I. 356).

HAB. Birma (Griff. 586); probably Tenasserim.

7. ST. COCCINEA, Roxb. Fl. Ind. III. 151; and Hook. Bot. Misc. I. 286; Hf. Ind. Fl. I. 357.

HAB. Frequent in the tropical forests of the Pegu Yomah and Martaban down to Tenasserim. Fl. March; Fr. Apr.

Masters refers my Pegu specimens to a species which he calls *St. lœvis*, Wall., but my plant is certainly Roxburgh's.

8. ST. RUBIGINOSA, Vent. Hort. Malm. II. 91 in adn.; Hf. Ind. Fl. I. 358.

HAB. Birma (teste Masters).

9. ST. ANGUSTIFOLIA, Roxb. Fl. Ind. III. 148; DC. Prod. I. 482; Walp. Rep. V. 100.

Var.  $\alpha$ . ANGUSTIFOLIA, leaves on petioles 8 to 10 lin. long, lanceolate or broadly lanceolate, acuminate.

Var.  $\beta$ . MOLLIS (*St. mollis*, Wall. Cat. 1131; Walp. Rep. V. 101), leaves obovate oblong, on petioles 4 to 5 lin. long, shortly acuminate, rounded at the narrowed base; tomentum almost velvety; pedicels much shorter.

HAB. Both varieties in Tenasserim (Wall. Falc. Helf.) Fl. Febr.; Fr. Apr.

10. ST. PARVIFLORA, Roxb. Fl. Ind. III. 147; Hf. Ind. Fl. I. 359.

HAB. Andamans, in the coast-forests. Fr. Apr. May.

My specimens being in fruit only the identification is somewhat doubtful, but they agree otherwise with Malacca specimens. Masters mentions *St. guttata*, Roxb. as growing on the Andamans.

11. *St. COLORATA*, Roxb. Corom. Pl. I. t. 23 and Fl. Ind. III. 146; Hook. Ic. pl. t. 143; Hf. Ind. Fl. I. 359.

HAB. Frequent in all leaf-shedding forests all over Burma from Chittagong and Ava down to Tenasserim and the Andamans. Fl. H. S.; Fr. H. and begin of R. S.

12. *St. FULGENS*, Wall. Cat. 1135 (*Firmiana colorata*,  $\beta.$  *fulgens*, R. Br. and Benn. in Horsf. Pl. Jav. rar. 235; Walp. Rep. V. 104).

HAB. Ava, Taong dong; Tenasserim, Moulmein (Wall.)

I know not what Masters describes under the above name, unless it be the N. W. Indian *St. pallens*, Wall. ap. Voigt Cat. H. Bot. Calc. 105, a totally different tree with pale yellowish softly tomentose smaller and more campanulate flowers and different leaves.

13. *St. CAMPANULATA*, Wall. ap. Voigt. Hort. Calc. 105; Kurz in Flora 1872. 495.; Hf. Ind. Fl. I. 362. (*Pterocymbium Javanicum*, R. Br. in Horsf. Pl. Jav. rar. 219. t. 45; Miq. Fl. Ind. Bat. I/2. 179).

HAB. Frequent in the tropical forests along the eastern slopes of the Pegu Yomah and Martaban. Fl. March; Fr. Apr.

14. *St. SCAPHIGERA*, Wall. Cat. 1130; Hf. Ind. Fl. I. 361. (*Scaphium Wallichii*, Schott and Endl. Melet. 33; Walp. Rep. V. 104; *Carpophyllum macropodum*, Miq. Suppl. Fl. Sumatr. 401).

HAB. Frequent in the tropical forests along the eastern and central slopes of the Pegu Yomah and Martaban; also Tenasserim. Fl. Febr. March; Fr. March, Apr.

15. *St. ALATA*, Roxb. Corom. Pl. III. 84. t. 287 and Fl. Ind. III. 182; Hf. Ind. Fl. I. 360. (*St. Heynii*, Bedd. Fl. Sylv. t. 230).

HAB. Frequent in the tropical forests all over Chittagong, Pegu and Martaban down to Tenasserim; also on the Andamans. Fl. Febr. March, Fr. Apr. May.

#### *Doubtful species.*

1. *St. LINGUIFOLIA*, Mast. in Hf. Ind. Fl. I. 357.

HAB. Tenasserim, Tavoy (Parish).

2. *St. ENSIFOLIA*, Mast. in Hf. Ind. Fl. I. 359.

HAB. Tenasserim, Mergui (Griff.).

#### *Heritiera, Ait.*

#### *Conspectus of species.*

\* Carpels glossy or at least smooth, brown; leaves shortly petioled.

Leaves usually cordate or rounded at base; carpels strong-crustaceous, obliquely ovoid with a sharp keel pointed at the summit, ... ... ... *H. Tothila*.

Leaves usually narrowed at base; carpels fibrous-woody under the thin bladdery epicarp, obliquely and broadly depressed, the keel at the summit broad and almost wing-like, ... *H. minor*.

\* \* Carpels sea-green or grey, rough and corky-tuberled; leaves long petioled. Carpels obliquely ovoid, keel indistinct, at the extremity produced into a thick narrow wing-like appendage, ... .. *H. macrophylla*.

1. *H. Tothila*, (*H. littoralis*, Dry. in Ait. Hort. Kew. III. 546; Roxb. Fl. Ind. III. 142; DC. Prod. I. 63; *Balanopteris Tothila*, Gärtn. Fr. II. t. 99; Rheede Hort. Mal. VI. t. 21).

HAB. Frequent in the tidal forests all along the sea-shore from Chittagong down to Tenasserim and the Andamans. Fl. Apr. May; Fr. May.

2. *H. minor*, Lamk. Dict. III. 229; DC. Prod. I. 484; Roxb. Fl. Ind. III. 142. (*H. fomes*, Buch. in Sym. Ava Emb. 1800. t. 28; Hf. Ind. Fl. I. 363; *Balanopteris minor*, Gärtn. Fr. II. 1791. t. 98. f. 2; *H. littoralis*, Griff. Not. Dicot. 532. t. 585. f. 3).

HAB. Frequent in the tidal forests all along the Burmese shores from Chittagong down to Tenasserim, ascending the rivers as far as the tidal waves. Fl. Febr. Jun.; Fr. R. S.

3. *H. macrophylla*, Wall. ap. Voigt Hort. Calc. 103; Kurz in Journ. As. Soc. Beng. 1873. 61. and in Trim. Journ. Bot. 1874. 66. fig. 7.

HAB. Upper Tenasserim, at the foot of a hill a mile above Trogla (Wall. Cat. 1162).

### *Helicteres*, L.

#### *Conspectus of species.*

*Sect. 1. Spirocarpaea.* (*Isora*, Schott and Endl.). Carpels spirally twisted; leaves unequally serrate.

Calyx about  $\frac{1}{2}$  in. long or longer, ... ... ... ... ... *H. Isora*.

*Sect. 2. Orthocarpaea.* (*Oudemansia*, Miq.). Carpels straight or nearly so.

\* Calyx about  $\frac{1}{2}$  in. long or longer. Leaves unequally serrate or toothed.

Calyx laxly stellate-woolly and viscid, ... ... ... ... ... *H. viscosa*.

Calyx shortly scurvy tomentose, ... ... ... ... ... *H. hirsuta*.

\* \* Calyx only 2 or 3 lin. long.

O Carpels firmly cohering forming a densely villous-echinate apiculate or obtuse capsule. Leaves entire or obtusely serrate, shortly whitish-tomentose beneath.

Stems tawny tomentose; leaves sprinkled above with stellate hairs, blunt or acute, ... *H. obtusa*.

Stems glabrescent; leaves glabrous above, acuminate, ... ... ... *H. lanceolata*.

O O Carpels loosely cohering, with the points all free, shortly hairy echinate. Leaves never whitish pubescent beneath, serrate.

Flowers in short axillary racemes, ... ... ... ... ... *H. plebeja*.

Flowers in elongated slender racemes usually much longer than the pubescent leaves, ... *H. elongata*.

1. *H. ISORA*, L. sp. pl. 1366; Roxb. Fl. Ind. III. 143; Wight Ic. t. 180; Bot. Mag. t. 2061; Hf. Ind. Fl. I. 365.

HAB. Burmah (accord. Revd. Dr. F. Mason.)

2. *H. VISICIDA*, Bl. Bydr. 79; Walp. Rep. I. 334. (*Oudemansia viscida*, Miq. Fl. Ind. Bat. I/2. 171; *H. spicata*, var. *lanigera*, Mast. in Hf. Ind. Fl. I. 366).

HAB. Ava, Taong dong (Wall.)

3. *H. HIRSUTA*, (Lour. Fl. Coch. II. 648 ?); Bl. Bydr. 80. (*Oudemansia hirsuta*, Miq. Fl. Ind. Bat. I/2. 171; *H. spicata*, Colebr. in Roxb. Hort. Beng. 97; G. Don. Gen. Syst. I. 507; Walp. Rep. I. 332; *H. oblonga*, Wall. ap. G. Don. l. c. Walp. Rep. I. 332 and II. 794 and Ann. IV. 320).

Var.  $\alpha$ . *SPICATA*, (*H. spicata*, Coleb. l. c.).

- Var.  $\beta$ . *OBLONGA*, (*H. oblonga*, Wall. l. c.; *H. vestita*, Wall. Cat. 1844).

HAB. Var.  $\beta$ . Tenasserim, from Moulmein to Tavoy. Fl. March.

4. *H. OBTUSA*, Wall. Cat. 1184; Kurz in Journ. As. Soc. Beng. 1873. 62; Hf. Ind. Fl. I. 366.

HAB. Tenasserim, from Moulmein to Mergui; Pegu (Macl. teste Mast.); Andamans (V. Ball.) Fl. June; Fr. Jan. to Apr.

This is evidently a near ally to *H. virgata*, Wall. which some authors incorrectly combine with *H. Javensis*, Hassk. (= *Oudemansia integrerrima*, Miq. and *H. lanceolata*, DC.). The Chinese *H. angustifolia*, L. (*H. virgata*, Wall.) differs greatly by the small stellate-velvety-tomentose capsules. Also the shape and nervature of the leaves and the indumentum of the flowers appear to me different. Masters gives Mergui as a habitat for it, but he evidently has two or three species in view.

5. *H. PLEBEJA*, Kurz in Journ. As. Soc. Beng. 1870. 67; Hf. Ind. Fl. I. 366. (*H. glabriuscula*, Wall. Cat. 1185, nomen nudum; Hf. Ind. Fl. I. 366).

HAB. Frequent in the mixed, especially the upper mixed, forests of Arracan, Pegu and Martaban, up to 3000 ft. elevation; also Ava. Fl. Oct. Sept.; Fr. Jan. Febr.

The species is also frequent in the Sikkim Terai.

6. *H. ELONGATA*, Wall. Cat. 1845; Hf. Ind. Fl. I. 365.

HAB. Ava, Taong-dong etc.

Hardly more than an elongate-racemed variety of the preceding.

#### *Pterospermum*, Schreb.

##### *Conspectus of species.*

\* Capsules distinctly 5-cornered. Leaves large and broad.

O Stipules and bracteoles pinnatifid.

Calyx lobes 3-4 in. long; style towards the base villous, ... ... ... *P. acerifolium*.

O O Stipules...; bracteoles entire.

Calyx-lobes $1\frac{1}{2}$ -2 in. long; style glabrous,	...	...	<i>P. aceroides.</i>
* * Capsules terete or nearly so.			
O Leaves semi-sagittate at base; stipules pinnatifid.			
Flowers 3 in. long or longer; bracteoles large, divided into several many-cleft and jaggy lobes, forming an involucre,	...	...	<i>P. semisagittatum.</i>
O O Leaves never semi-sagittate, usually small, entire or shortly lobed; stipules small, entire or 2-3-cleft; flowers not above 2 in. long.			
† Pedicels much longer than the petioles.			
Leaves usually greyish or whitish tomentose beneath, acuminate; stipules and bracteoles 2-3- rarely 5-cleft. Capsules greyish or whitish velvety,	...	...	<i>P. lanceæfolium.</i>
† † Pedicels short, about the length of the petioles or rarely a little longer.			
Leaves entire, acuminate, beneath rusty coloured (rarely greyish) tomentose; stipules and bracteoles linear-subulate, with a cucullate basal appendage; capsules brown scurvy-tomentose, glabrescent,	...	...	<i>P. cinnamomeum.</i>
Leaves usually small; stipules and bracteoles entire, lanceolate,	...	...	<i>P. Blumeanum.</i>

1. *P. ACERIFOLIUM*, Willd. sp. pl. III. 729; Roxb. Fl. Ind. III. 158; Bot. Mag. t. 620; Wight Ic. t. 631; Hf. Ind. Fl. I. 368. p. p.

HAB. Frequent in the tropical and moister upper mixed forests along choungs all over Burma from Chittagong and Ava down to Tenasserim and the Andamans. Fl. H. S.; Fr. C. S.

2. *P. ACEROIDES*, Wall. Cat. 1171; Kurz in Journ. As. Soc. Beng. 1873. 62.

HAB. Tenasserim, and Andamans, in tropical forests. Fl. H. S.

*Pt. diversifolium*, Bl. appears to be an intermediate form between *Pt. acerifolium* and *Pt. aceroides*, having the flowers and styles of the former but smaller, and the bracteoles of the latter.

3. *Pt. SEMISAGITTATUM*, Roxb. Hort. Beng. 50 and Fl. Ind. III. 160; Hf. Ind. Fl. I. 368.

HAB. Frequent in the mixed and dry forests all over Burmah from Chittagong and Ava down to Tenasserim. Fl. H. S.; Fr. C. S.

4. *Pt. LANCEÆFOLIUM*, Roxb. Fl. Ind. III. 163; Hf. Ind. Fl. I. 368.

HAB. Chittagong; Tenasserim, Tavoy (Wall. teste Mast.)

5. *P. CINNAMOMEUM*, nov. sp.

HAB. Not unfrequent in the tropical forests of Martaban; also Tenasserim. Fr. March.

I attempted to identify the above species with *Pt. fuscum*, Korth. when I had only fruits, but Khasya flowering specimens shew its complete distinctness. Some Khasya specimens in leaf distributed from Kew under the name *Pt. lanceæfolium* belong here. It is nearest to *Pt. rubiginosum*.

6. *Pt. BLUMEANUM*, Korth. Ned. Kruidk. Arch. I. 311; Miq. Fl. Ind. Bat. I/2. 191.

HAB. Tenasserim (Helf. 569).

**Eriolæna, DC.**

1. E. CANDOLLEI, Wall. Pl. As. rar. I. 51. t. 64; Hf. Ind. Fl. I. 370.

HAB. Not unfrequent in the dry and low, rarely in the mixed, forests of Prome and Ava down to Martaban and Pegu. Fl. H. S.; Fr. C. S.

**Pentapetes, L.**

1. P. PHÆNICEA, L. sp. pl. 958; Roxb. Fl. Ind. III. 157; Bot. Reg. t. 525; Hf. Ind. Fl. I. 371. (*Eriorhaphe punicea*, Miq. Pl. Jungh. I. 289).

HAB. In cultivated plains, along rice-fields, etc., in Pegu, Ava and Prome. Fl. R. S.

**Melhania, Forsk.**

1. M. HAMILTONIANA, Wall. Pl. As. rar. I. 69. t. 77; Walp. Rep. I. 349; Hf. Ind. Fl. I. 372.

HAB. Ava, frequent along the sandy dry banks of the Irrawaddi; also Taong-dong (Wall.). Fl. Sept. Oct.; Fr. Nov.

**Melochia, L.**

1. M. CORCHORIFOLIA, L. sp. pl. 944; Roxb. Fl. Ind. III. 139; Hf. Ind. Fl. I. 374.

HAB. Common as well in cultivated lands, waste places around villages, long-grassed pastures, etc., as in the leaf-shedding forests, all over Burma and adjacent provinces. Fl. Fr. Sept. to Octob.

**Visenia, Houtt.**

1. V. INDICA, Houtt. Syst. Linn. VI. 287. t. 46; Miq. Fl. Ind. Bat. I/2. 189. (*V. umbellata*, Bl. Bydr. 88; Wight Ic. t. 509; *Riedleia velutina*, DC. Prod. I. 491; *Melochia velutina*, Bedd. Fl. Sylv. t. 5; Hf. Ind. Fl. I. 374).

HAB. Rather rare in the tropical forests of Pegu, Martaban and Tenasserim (Brandis). Fl. R. S.

**Waltheria, L.**

1. W. AMERICANA, L. sp. pl. 941; DC. Prod. I. 492. (*W. Indica*, L. l. c. 941; Hf. Ind. Fl. I. 374).

HAB. Not uncommon on the lower hills of the Irrawaddi valley from Ava (Segain) to Prome. Fl. Sept. Oct.

**Guazuma, Plum.**

- \*1. G. TOMENTOSA, H. B. K. Nov. Gen. V. 320; Wight Ill. t. 31; Bedd. Fl. Sylv. Madr. t. 107; Hf. Ind. Fl. I. 375.

HAB. An American tree sometimes seen planted as an avenue-tree. Fl. R. S.; Fr. C. S.

**Leptonychia, Turez.***Conspectus of species.*

Outer staminods 15, the inner staminods ciliate; capsule 1-celled, rugose, ... *L. glabra*.  
 Outer staminods 10, the inner not ciliate; ovary and capsule 3-5-celled and lobed, the latter minutely tubercled, ... ... ... ... ... *L. heteroclita*.

1. *L. GLABRA*, Turez in Bull. Mosc. 1858. 222; Hf. Ind. Fl. I. 379.  
 excl. syn.

HAB. Tenasserim (Helf. 658); Moulmein (Lobb. teste Mast.).

2. *L. HETEROCLITA*, Kurz in Journ. As. Soc. Beng. 1870. 67. excl. syn. Turez. (*Grewia heteroclita*, Roxb. Fl. Ind. II. 590; *Binnendyckia trichostylis*, Kurz in Tydsch. Nat. Ver. Ned. Ind. ser. 3. III. 164; *L. moacurroides*, Bedd. Fl. Sylv. Madr. t. 114; Hf. Ind. Fl. I. 379; *Grewia acuminata*, Bedd. in Linn. Trans. XXV. 210?; Hf. Ind. I. 393?).

HAB. South Andaman, in tropical forests.

**Buettneria, L.***Conspectus of species.*

✗ Leaves cordate-oblong, entire.

Capsules large, greyish velvety, covered with strong woody prickles, ... *B. aspera*.

✗ ✗ Leaves more or less lobed or angular. Capsules the size of a cherry.

More or less roughish stellate-tomentose; capsules densely covered with brown setose flexible bristles, ... ... ... ... ... *B. pilosa*.

Glabrous or almost so; capsules covered with long stiff smooth bristles, *B. Andamanensis*.

1. *B. ASPERA*, Colebr. ap. Wall. in Roxb. Fl. Ind. ed. Car. II. 383; Hf. Ind. Fl. I. 377.

HAB. Not unfrequent in the tropical forests from Pegu and Martaban down to Tenasserim and the Andamans. Fl. Apr. May.

2. *B. PILOSA*, Roxb. Fl. Ind. I. 618; Hf. Ind. Fl. I. 377.

HAB. Frequent in tropical and mixed forests all over Burma and adjacent provinces. Fr. C. S.

3. *B. ANDAMANENSIS*, Kurz in Andam. Rep. App. B. p. 3. and Journ. As. Soc. Beng. 1871. 47; Hf. Ind. Fl. I. 377.

HAB. Frequent in the coast forests of South Andaman; also Upper Tenasserim, along the Thoungyeen and Attaran rivers (Brandis); Moulmein (Lobb). Fr. H. S.

*Doubtful species.*

I. *B. CRENULATA*, Wall. Cat. 1150; Hf. Ind. Fl. I. 376.

HAB. Pegu (McLellan); Tenasserim, Attaran and Salween (Wall.) ex Masters.

Wall. Cat. 1152 is mentioned in the Lith. List as *Kleinhovia hospita*. *B. catalpifolia*, as represented in the Wallichian Herb. in H. B. C., is a Caracas plant, cultivated and collected in H. B. C. and bears no number.

*B. echinata* Wall. Cat. 1149 is the only No. which I have myself seen, and consists of loose leaves and a piece of a capsule, the former differing from his *St. parviflora*, Wall. Cat. 1121 from Silhet only in size, the latter almost indistinguishable from *B. Andamanensis*. Nipal is also given as a locality but Wallich's Nos. cited are all Burmese.

## TILIACEÆ.

### Conspectus of genera.

#### A. Anthers opening by slits.

*Trib. I. BROWNLOWIEÆ.* Sepals united into a bell-shaped 3- to 5-cleft calyx. Anthers short, usually globular or didymous, the cells ultimately confluent at the top.

\* The 5 inner stamens reduced to staminods.

1. *BROWNLOWIA*. Carpels distinct, globular, 2-valved.

2. *PENTACE*. Fruits 3-5-winged, indehiscent, by abortion 1-seeded.

\* \* Anthers all anther-bearing,

3. *BERRYA*. Capsule 3-4-valved, with twice as many wings. Styles 1-4, filiform.

*Trib. II. GREWIEÆ*. Sepals distinct. Petals with a basal scale more or less adnate, inserted round the base of a more or less raised torus bearing at the top the stamens. Anthers short, the cells parallel and distinct.

\* Fruit dry, winged.

4. *COLUMBIA*. Fruit 3-5-celled, separating into as many 2-winged cocci.

\* \* Fruit more or less drupaceous, not winged.

O Fruit unarmed, tomentose to glabrous.

5. *GREWIA*. Drupes more or less lobed or globular.

O O Fruits prickly.

6. *TRIUMFETTA*. Drupe usually small, globular, indehiscent or separating into cocci.

*Trib. III. TILIEÆ*. Sepals distinct. Petals without a scale at base, inserted directly round the stamens.

\* Capsule opening loculicidally, almost pod-like or globular, many-seeded.

7. *CORCHORUS*. Stamens all anther-bearing. Capsules pod-like or globular, striate or muricate.

\* \* Fruits globular, indehiscent, usually 1-seeded.

8. *SCHOUTENIA*. Calyx enlarged under the fruit, membranous, spreading. Stamens free, all anther-bearing.

#### B. Anthers opening by apical pores.

*Trib. IV. SLOANEÆ*. Anthers linear. Staminal disk flat or cushion-like, the sepals and petals inserted directly round the stamens.

9. *ECHINOCARPUS*. Sepals 4, imbricate in 2 series. Petals 4, gashed, almost imbricate. Disk thick and broad. Capsule woody, 4-valved, echinate setose or velvety.

*Trib. V. ELÆOCARPEÆ*. Anthers linear. Petals inserted round the base of a raised torus from the top of which the stamens spring.

10. *ELÆOCARPUS*. Sepals 4-5. Petals induplicate-valvate, laciniate or rarely entire. Drupes fleshy.

**Brownlowia, Roxb.***Conspectus of species.*

* Leaves deeply peltate.					
Leaves oblong or rotundate; calyx velvety,	...	...	...	...	<i>B. peltata.</i>
* * Leaves not peltate.					
Leaves cordate-oblong; calyx velvety,	...	...	...	...	<i>B. elata.</i>
Leaves lanceolate; calyx scaly,	...	...	...	...	<i>B. lanceolata.</i>

1. *B. PELTATA*, Bth. in Linn. Proc. V. Suppl. 56.

HAB. Tenasserim (Helf. 624).

Apparently merged by Masters into *B. elata* and possibly rightly so.

2. *B. ELATA*, Roxb. Corom. Pl. III. t. 265; Bot. Reg. t. 1472. Wall. Pl. As. rar. III. 45; Hf. Ind. Fl. I. 381. (*Humea elata*, Roxb; Fl. Ind. II. 640).

HAB. Chittagong; Tenasserim, Moulmein.

3. *B. LANCEOLATA*, Bth. in Linn. Proc. V. Suppl. 57; Hf. Ind. Fl. I. 381.

HAB. Rather frequent in the tidal forests and mangrove swamps from Arracan (Akyab) and Rangoon down to Tenasserim (Moulmein). Fl. Febr.—May.

**Pentace, Hassk.**

1. *P. BURMANICA*, Kurz in Journ. As. Soc. Beng. 1871. 47; Hf. Ind. Fl. I. 381.

HAB. Frequent in the tropical forests of the eastern and southern slopes of the Pegu Yomah and Martaban down to Upper Tenasserim. Fl. Jan.; Fr. Febr. March.

**Berrya, Roxb.**

1. *B. MOLLIS*, Wall. Cat. 1186; Kurz in Journ. As. Soc. Beng. 1873. 62. (*B. Ammonilla*, var. *mollis*, Mast. in Hf. Ind. Fl. I. 383).

HAB. Not unfrequent in the drier upper mixed and hill Eng forests of Martaban and the Pegu Yomah up to 3000 ft. elevation. Fr. March.

**Columbia, Pers.***Conspectus of species.*

Leaves cordate-oblong; fruits $\frac{3}{4}$ -1 in. across,	...	...	...	<i>C. floribunda.</i>
Leaves lanceolate; fruits $1\frac{1}{2}$ in. across,	...	...	...	<i>C. Merguensis.</i>

1. *C. FLORIBUNDA*, Kurz in Journ. As. Soc. Beng. 1873. 63; Hf. Ind. Fl. I. 393. (*Grewia floribunda*, Wall. ap. Voigt (not Voight) Cat. Hort. Calc. 128).

HAB. Martaban, in Toukyeghat E. of Toungloo; also Ava, on Taong dong. Fr. Nov. Jan.

2. *C. MERGUENSIS*, Planch. in Hf. Ind. Fl. I. 394.

HAB. Tenasserim, Mergui (Griff.)

**Grewia, L.**

*Subg. 1. Microcos.* Stigma shortly toothed. Flowers forming terminal panicles, involucered while in bud.

\* Endocarp of drupes fibrous-woody.

Leaves entire, almost coriaceous, quite glabrous; ovary and torus velvety-tomentose,  
... *G. calophylla*.

✗ ✗ Endocarp of drupes crustaceous or bony.

Leaves thin chartaceous, glabrous or beneath puberulous, not sinuate; ovary and torus  
glabrous, ... ... ... ... ... *G. microcos*.

As preceding but flowers and leaves much smaller, the latter sinuate-lobed, ... *G. sinuata*.

Leaves thick chartaceous and rugose, tomentose beneath; ovary and torus villous,  
... *G. paniculata*.

*Subg. 2. Grewia veræ.* Stigmas dilated and fringed, radiating. Flowers in axillary  
or leaf-opposed cymes or clusters.

O Cymes or clusters axillary.

✗ Leaves at base 3-nerved, rarely with an additional lateral one.

† Drupes deeply 2-4-lobed from the top, by abortion sometimes  
1-lobed.

Cymes and sepals shortly rusty tomentose; leaves on both surfaces very scabrous from  
minute stellate hairs; drupes deeply 4-lobed, ... ... ... *G. seabraida*.

Cymes sprinkled with stiff hairs, glabrescent; sepals greyish or tawny velvety; leaves  
glabrous, or sprinkled with simple short hairs, rarely puberulous beneath; drupes  
didymous, ... ... ... ... ... *G. lavigata*.

† † Drupes entire or only slightly and obtusely lobed at the top.

Leaves beneath and young parts greyish velvety; drupes globular, grey-pubescent,  
... *G. excelsa*.

Leaves at base 3- or 4-nerved; cymes rather long peduncled; drupes obsoletely 4-lobed  
red, sparingly hirsute, ... ... .. ... .. *G. hirsuta*.

As preceding, but more densely pubescent or tomentose; drupes obsoletely 2-lobed, red  
sparingly hirsute, ... ... ... ... .. *G. humilis*.

Leaves at base 3- or 4-nerved, scabrous; flowers in short dense sessile clusters; stamens 16,  
... *G. microstemma*.

✗ ✗ Leaves usually broad, at base 5-7-nerved, the upper ones often  
only 3-nerved or 3- and 5-nerved ones mixed.

† Peduncles slender, much longer than the petioles.

Leaves obliquely lanceolate, especially while young greyish or whitish tomentose beneath,  
... *G. elastica*.

Leaves broadly obovate or almost rotundate, on both sides sprinkled with stellate hairs,  
or pubescent beneath, often scabrous, ... ... ... *G. Asiatica*.

† † Peduncles very short or almost reduced and the flowers ap-  
pearing clustered.

Leaves very variable in shape, tomentose to pubescent; drupes from the top deeply 4- or  
only by abortion fewer-lobed, ... ... ... ... *G. abutilifolia*.

Leaves very scabrous and harsh; drupes the size of a cherry, almost globular,  
... *G. sclerophylla*.

O O Cymes opposite the leaves, ... ... ... *G. oppositifolia*.

1. *G. CALOPHYLLA*, Kurz in And. Rep. App. B. 3; and in Flora 1872  
398; Hf. Ind. Fl. I. 392.

HAB. Not uncommon in the tropical coast-forests of South Andaman.  
Fl. May, June.

2. G. MICROCOS, L. sp. pl. ed. 12. 602; Wight Ill. t. 33; Hf. Ind. Fl. I. 392. (*G. ulmifolia*, Roxb. Fl. Ind. II. 591; Wight Ic. t. 84).

HAB. Frequent all over Burma from Chittagong and Ava down to Tenasserim, in the mixed forests, especially the lower ones. Fl. Apr.—June.

Like a few other *Grewia* perplexingly variable in size and shape, here a well-shaped tree 40 to 50 ft. high, there a meagre shrub of only a few feet in height; the latter form growing chiefly on deep alluvium, in savannahs and similar localities.

3. G. SINUATA, Wall. Cat. 1108; Hf. Ind. Fl. I. 392.

HAB. Frequent in the swamp-forests of the Irrawaddi and Sittang alluvial plains in Pegu and Martaban; also Tenasserim as far down as Mergui. Fl. May.

Possibly only a marsh-form of the preceding.

4. G. SCABRIDA, Wall. Cat. 11,13. p. p.; Kurz in Journ. As. Soc. Beng. 1873. 63; Hf. Ind. Fl. I. 398, excl. syn.

HAB. Tenasserim, from Moulmein (Falconer) and Tavoy (Wall.) down to Mergui (Helf.). Fl. Sept.; Fr. Febr.

5. G. LÆVIGATA, Vhl. Symb. I. 34; Hf. Ind. Fl. I. 389. (*G. didyma*, Roxb. Fl. Ind. III. 591).

Var.  $\alpha$ . GLABRA, leaves glabrous, or tufted-hairy in the nerve-axils beneath.

Var.  $\beta$ . PUBESCENS, leaves beneath minutely puberulous or densely downy.

HAB. Var.  $\beta$ . not uncommon in the upper mixed forests all over Pegu and adjacent provinces down to Tenasserim; var.  $\alpha$ . in Arracan. Fl. Sept. Oct.; Fr. March Apr.

6. G. EXCELSA, Vhl. Symb. III. 35; Roxb. Fl. Ind. II. 586?; Hf. Ind. Fl. I. 385. (*G. salvifolia*, Roxb. l. c. 587).

HAB. Chittagong (teste Masters).

I have not seen specimens; the occurrence of such a xeroclimatic form in Chittagong is exceptional.

7. G. HIRSUTA, Vhl. Symb. I. 34; DC. Prod. I. 509; Roxb. Fl. Ind. II. 587; Wight Ic. t. 76; Hf. Ind. Fl. I. 391. (*G. pilosa*, Roxb. Fl. Ind. II. 588).

Var.  $\alpha$ . GENUINA, leaves green, 3-nerved, more or less sprinkled with short stiff hairs.

Var.  $\beta$ . VIMINEA, (*G. viminea*, Wall. Cat. IV), as the preceding, but the leaves longer and narrower, very long acuminate.

Var.  $\gamma$ . HELICTERIFOLIA (*G. helicterifolia*, Wall. MS.), leaves acuminate, at base 3- or almost 4-nerved, thinly hirsute or tomentose above, beneath clothed with a whitish velvety tomentum.

HAB. Var.  $\alpha$ . and  $\beta$ . frequent all over Burmah in the mixed forests, especially in the upper ones ; var.  $\gamma$ . not yet found. Fl. H. and R. S.; Fr. C. S.

8. G. HUMILIS, Wall. ap. Voigt Cat. Hort. Beng. 128; Hf. Ind. Fl. I. 390.

Var.  $\alpha$ . WALlichii, tomentum more villous, leaves acute.

Var.  $\beta$ . RETUSIFOLIA, (*G. retusifolia*, Kurz in Journ. As. Soc. Beng. 1872. 294), tomentum velvety ; leaves deeply retuse and broader.

HAB. Var.  $\alpha$ . Ava, Segain hills (Wall.); var.  $\beta$ . not unfrequent in savannahs, especially along the borders of swamp forests of the Irrawaddi alluvium in Pegu. Fr. C. S.

The drupes are normally 4-lobed, but by abortion usually 2- rarely 1- or 3-lobed. The species is hardly more than an extreme form of *G. hirsuta*, Vhl.

9. G. MICROSTEMMA, Wall. ap. Voigt Cat. Hort. Calc. 128; Kurz in Journ. As. Soc. Beng. 1873. 63; Hf. Ind. Fl. I. 390.

HAB. Ava; Prome hills (Wall.) Fl. Sept. Oct.

10. G. ELASTICA, Royle Ill. Him. Pl. 104. t. 22; Walp. Rep. I. 361. (*G. asiatica*, var. *vestita*, Mast. in Hf. Ind. Fl. I. 387.)

HAB. Frequent in the upper mixed forests of the Pegu Yomah and Martaban ; also Chittagong. Fl. Nov. Deeb.

11. G. ASIATICA, L. Mant. 122; Roxb. Fl. Ind. II. 586; Hf. Ind. Fl. I. 386.

Var.  $\beta$ . NANA, (*G. nana*, Wall. Cat. 1102), stunted and low, possibly the result of jungle fires.

HAB. Only the stunted variety appears to grow in Burma (Griff. 656) probably Ava ?

12. G. TILLEFOLIA, Vhl. Symb. I. 35; Roxb. Fl. Ind. II. 587; Bedd. Fl. Sylv. Madr. t. 108; Hf. Ind. Fl. I. 386.

HAB. Birma (teste Masters).

13. G. ABUTILIFOLIA, Juss. Ann. II. 92; DC. Prod. I. 511; WA. Prod. I. 79? Miq. Fl. Ind. Bat. I/2. 201; Hf. Ind. Fl. I. 390. (*G. aspera*, Roxb. Fl. Ind. II. 591).

Var.  $\alpha$ . ASPERA, (*G. aspera*, Roxb. I. c.) leaves all rotundate and often somewhat lobed towards the summit ; sepals only  $2\frac{1}{2}$  lin. long or a little longer, pubescent from stiff appressed hairs ; petals  $\frac{1}{2}$  lin. long ; bracteoles short, oblong, acute. A low shrub, 2 to 3, often only  $\frac{1}{2}$  foot high, the tomentum usually short.

Var.  $\beta$ . VIRIDESCENS, as the preceding, but the leaves of a very thin chartaceous texture and very large, green, acuminate, above hirsute from simple, beneath from stellate, tawny hairs ; flowers usually larger ; sepals tawny pubescent ; petals as in the preceding variety, but the lamina more acute ; ripe drupes glabrous. Low shrub, 2-3 ft. high.

Var.  $\gamma$ . *sclerophylloides*, a low shrub, 3-4 ft. high, more or less branched, the younger parts densely rusty-coloured villous; leaves very variable in shape on the same branch, the lower ones usually ovate-oblong, up to nearly one foot long, the upper and uppermost ones gradually smaller and narrower, from ovate to lanceolate, doubly and sometimes bristly serrate, acuminate, scabrous or thinly pubescent above, beneath more or less stellate-pubescent or almost tomentose; bracteoles linear-lanceolate, acuminate, pubescent externally, longer or as long as the flower-buds; petals a line long, the lamina acuminate, pubescent outside; drupes deeply 4-lobed, often remaining sparingly hirsute during ripeness. A laterite form.

HAB. Var.  $\alpha$ . Pegu (Col. Eyre); var.  $\beta$ . not unfrequent in the upper mixed forests of the Pegu Yomah; var.  $\gamma$ . frequent in the open, especially the low and Eng forests of Pegu, Prome and Martaban. Fl. May.

A very variable plant of which I entertained some hope of being able to separate var  $\gamma$ . (which is also a common Assam plant) specifically. It resembles in size of flowers *G. sclerophylla*, but the deeply 4-lobed drupes at once separate it.

14. *G. SCLEROPHYLLA*, Wall. Cat. 1095; Wight Ic. t. 89. (*G. scabrophylla*, Roxb. Fl. Ind. II. 584 [nomen latino-græcum]; Hf. Ind. Fl. I. 387).

HAB. Ava and Chittagong (teste Masters).

#### *Doubtful species.*

1. *G. lanceolata*, Roxb. Fl. Ind. II. 586.

HAB. Chittagong (Roxb.)

Possibly the same as *G. viminea*, Wall.

#### *Triumfetta, L.*

##### *Conspectus of species.*

Sect. 1. *Lappula*. Capsules indehiscent or nearly so, globular, echinate, the cells usually 1-seeded.

Leaves rotundate, not lobed, blunt, beneath greyish-tomentose like the sepals,

... *T. rotundifolia*.

Leaves rotundate, acuminate, often lobed; the sepals stellate-hairy, ... *T. rhomboidea*.

Sect. 2. *Bartramia*. Capsules when ripe separating into 3-4 cocci, densely covered by long bristles, the cells usually 2-seeded.

Leaves slightly hirsute; capsules and bristles glabrous, ... *T. annua*.

Leaves at least beneath densely tomentose or pubescent; capsules tomentose, the bristles more or less pilose, straight or curved, ... *T. pilosa*.

1. *T. RHOMBOIDEA*, Jacq. Am. 147. t. 90; Mast. Fl. Trop. Afr. I. 257 and Hf. Ind. Fl. I. 395. (*T. angulata*, Lamk. Dict. III. 41; Wight Ic. t. 320; *T. Bartramia*, Roxb. Fl. Ind. II. 463; *T. cana*, Bl. Bydr. 116, non Mast.).

**HAB.** A common weed not only in cultivated lands but also in all leaf-shedding forests all over Burma and adjacent provinces. Fl. R. and C. S.; Fr. C. S.

2. *T. semitriloba*, L. Mant. 73; Hf. Ind. Fl. I. 396.

**HAB.** Tenasserim, Tavoy (teste Masters).

3. T. ROTUNDIFOLIA, Lamk. Dict III. 421; Hf. Ind. Fl. I. 395.

HAB. Ava (Wall.)

- 4 T. ANNUA, L. Mant. 73; Bot. Mag. t. 2296; Hf. Ind. Fl. I. 396

HAB. Not unfrequent in the upper-mixed and dry forests all over Pegu, also frequent in deserted hill-toungyas; Ava. Fr. Nov.—Febr.

5. T. PILOSA, Roth Nov. sp. 223; Hf. Ind. Fl. I. 394.

Var.  $\beta$ . *OBLONGA*, (*T. oblonga*, Wall. in Don I. Prod. Rep. 227; *T. tomentosa*, Mast. in Hf. Ind. Fl. I. 394, non Boj.; *T. octandra*, Griff. Nat. Dicot. 512?) the bristles of the carpels somewhat shorter and straight or nearly so.

HAB. Var.  $\beta$ . common all over Burma and adjacent provinces, in the mixed forests and deserted toungyas. Fr. Nov. Jan.

Masters, in Fl. trop. Afr. and Fl. Ind., identifies var.  $\beta$ . of this species with *T. tomentosa*, Boj. The Mauritian plant, which for a long time was cultivated in H.B.C. but is now apparently lost, has a velvety tomentum and small globular fruits not larger than those of *T. rhomboidea*, while Masters describes them as being as large as a cherry.

### Doubtful species.

1. T. CANA, Masters in Hf. Ind. Fl. I, 396, non Bl.

HAB. Chittagong ( teste Masters).

## **Corchorus, L.**

### *Conspectus of species.*

§ 1. Capsules globular or nearly so, more or less muricate.

Lower pairs of serratures of leaves produced into five bristles: capsules 10-sulcate, truncate, ... ... ... ... ... ... ... ... ... *C. capsularis*.

§ 2. Capsules more or less elongate or linear, cylindrical or angular, but not winged.

\* Capsules 1 to 2 in. long or longer. Stamens very numerous.

O Lower pair of serratures of leaves produced into long bristles.

Capsules 2 in. long, 5-celled and 5-ribbed, longitudinally pitted, the partitions within very distinct. . . . . *C. olitorius*.

O O Leaves without basal bristles, usually small and blunt.  
Capsules about 2 in. long, sparingly and minutely tubercled, glabrous, simply beaked,

As preceding, but capsules only about 1 in. long, thinly pilose, ... *C. 3-ovularis*.  
 Capsules 1 in. long, smooth, not wrinkled, 2-4 celled, 2-4 toothed at apex, with ... *C. urticafolius*.

stules 1-1½ in. long, almost terete, not wrinkled, 3-4-celled, 3-4-toothed at apex, with 4-5 partitions inside.

\* \* Capsules about  $\frac{1}{4}$  in. long. Stamens 5 to 10.

Capsules almost terete, tomentose, 3-celled, without partitions inside, ... *C. fascicularis*.  
 § 3. Capsules elongate, thick, truncate, 6-angled, the alternate angles winged.  
 Stamens 15 to 20. Leaves without bristles. Capsules  $\frac{3}{4}$ —1 in. long, terminating in 3 simple or 2-cleft spreading points, ... ... ... *C. acutangulus*.

1. C. CAPSULARIS, L. sp. pl. 746; Roxb. Fl. Ind. II. 581; Wight Ic. t. 311; Hook. Journ. Bot. II. 92. t. 3, Hf. Ind. Fl. I. 397.

HAB. Cultivated all over Burma, and frequently seen in deserted toungyas, along the borders of forests, around villages, etc. Fl. C. S.; Fr. H. S.

2. C. OLITORIUS, L. sp. pl. 746; Roxb. Fl. Ind. II. 581; Bot. Mag. t. 2810; Griff. Not. Dicot. 512; Hf. Ind. Fl. I. 397. (*C. decemangularis*, Roxb. l. c. 582).

HAB. Ava, Pegu, cultivated and wild in rubbishy places and agrarian lands. Fl. R. S.; Fr. C. S.

3. C. TRILOCULARIS, L. Mant. 77; Roxb. Fl. Ind. II. 582; Hf. Ind. Fl. I. 397.

HAB. Burma (according to Dr. Mason).

4. C. URTICÆFOLIUS, WA. Prod. I. 73; Hf. Ind. Fl. I. 397.

HAB. Ava (Wall.)

5. C. TRIDENS, L. Mant. 566; Hf. Ind. Fl. I. 398. (*C. trilocularis*, Burm. Fl. Ind. t. 37. f. 2).

HAB. Prome District (Wall.).

6. C. FASCICULARIS, Lamk. Dict. II. 104; Roxb. Fl. Ind. II. 582; Hf. Ind. Fl. I. 398.

HAB. Not unfrequent in dried up river-beds in the swamp forests and savannahs between the Lhein and Irrawaddi rivers in Pegu. Fr. C. S.

7. C. ACUTANGULUS, Lamk. Dict. II. 104; Wight Ic. t. 739; Hf. Ind. Fl. I. 398. (*C. fuscus*, Roxb. Fl. Ind. II. 582).

HAB. Very frequent not only in rubbishy places, deserted toungyas, etc., but also in the leaf-shedding forests, all over Burma up to 3000 feet elevation. Fl. R. S.; Fr. C. S.

### Echinocarpus, Bl.

#### *Conspectus of species.*

Leaves entire, tufted-hairy in the nerve-axils beneath; prickles of fruit strong, usually thickened at base, ... ... ... ... ... *E. Sigun*.

Leaves crenate-serrate or toothed, at least when young puberulous beneath, the prickles longer, all thin and subulate, ... ... ... ... *E. sterculiaeus*.

1. E. SIGUN, Bl. Bydr. 56; Miq. Fl. Ind. Bat. I/2. 109. (*E. murex*, Bth. in Linn. Proc. V. Suppl. 72; Hf. Ind. Fl. I. 399).

HAB. Tenasserim, Thoungyeen, Ta-oo-road (Brandis). Fr. Apr.

Masters states that the prickles of *E. murex* are dilated at the base; the Khasya specimens No. 5. Hb. or. Hf. and Th., however, exhibit not a vestige of dilatation being simply incrassate at base just as those of the Javanese plant. The sigún is a common tree in the hill-forests of western Java and there well-known to Dutch botanists.

2. E. STERCULIACEUS, Bth. in Linn. Proc. V. Suppl. 72; Hf. Ind. Fl. I. 400.

HAB. Not unfrequent in the drier hill-forests of Martaban; Tenasserim, Moulmein District (Falconer); Birma (Griff. 675).

### *Elæocarpus, L.*

#### *Conspectus of species.*

Subg. 1. *Monoceras*. Anthers cuspidate or aristate. Flowers usually rather large, the petals silky-hairy, fringed or very rarely entire.

\* Petals entire with a few short teeth at apex or simply fringed, not cut or cleft. Petioles continuous, not geniculate-incrassate.

O Inflorescence and sepals outside almost glabrous.

All parts glabrous, ... ... ... .. .. .. *E. petiolatus*.

O O Inflorescence and sepals outside silky-pubescent.

Glabrous; petals entire, acuminate; pedicels  $\frac{2}{3}$ - $\frac{3}{4}$  in. long, ... *E. Griffithii*.

Glabrous; petals deeply but simply fringed; pedicels 3-4 lin. long, ... *E. Varunua*.

\* \* Petals 2-3-cleft, the lobes jagged or fringed; anthers glabrous or puberulous.

O Petiole geniculate-thickened at apex.

† Inflorescence with long-persistent leafy bracts.

All parts also sepals and inflorescence glabrous, ... ... ... *E. bracteatus*.

† † Bracts of inflorescence small, very deciduous.

X Racemes and sepals glabrous or nearly so, ... *E. simplex*.

X X Racemes and sepals more or less tomentose or pubescent.

Leaves 1-1½ ft. long, cuneate-acuminate at base, acute; anthers shorter than the bristle; drupes puberulous, the putamen slightly compressed, ... *E. grandifolius*.

Leaves  $\frac{1}{2}$ -1 ft. long, rounded at the narrowed base; leaves glabrous or nearly so; putamen terete, ... ... ... ... *E. rugosus*.

O O Petiole continuous, not geniculate-thickened at apex.

Glabrous. Putamen long recurved-aculeate, ... ... ... *E. grandiflorus*.

Putamen lacunose-tubercléd; leaves blunt, very thick coriaceous, glabrous, *E. littoralis*.

Subg. 2. *Elæocarpi veri*. Anthers blunt, or the longer valve sharply produced; flowers small; petals glabrous.

† Putamen even and usually slightly rimose, or obsoletely wrinkled.

Calyx and pedicels glabrous.

Leaves glabrous, blistered-speckled and opaque; petioles long, thickened at the summit; anthers bearded, ... ... ... ... *E. floribundus*.

Leaves glabrous, opaque, acuminate; petiole not geniculate-thickened, ... *E. lanceæfolius*.

Leaves glabrous, blunt or rounded at apex; petioles short but slender, not thickened; anthers naked; drupes unknown, ... ... ... *E. hygrophilus*.

† † Putamen wrinkled or tubered. Calyx and pedicels puberulous.

X Petioles not geniculate-thickened at apex.

Leaves and petioles glabrous; style long, exserted; the longer anther-cell acute; drupes globular, ... ... ... ... ... ... ... ... *E. ganitrus.*

Leaves beneath along the nerves and the short petioles densely puberulous; style short; anther-cells equal, blunt; drupes oblong, ... ... ... *E. lacunosus.*

**× ×** Petioles thickened at summit.

Leaves beneath and the rather short petioles densely puberulous, .. *E. Wallichii*.

Leaves and the long petioles glabrous; drupes oblong, ... *E. robustus*.

All parts densely and shortly pubescent; drupe globular, ... *E. stipularis*.

1. E. GRIFFITHII, Kurz in Journ. As. Soc. Beng. 1870. 68; Hf. Ind. Fl. I. 408. (*Monoceras trichanthera*, Griff. Not. Dicot. 518. t. 619. f. 2).

HAB. Tenasserim, Mergui, in shrubberies (Griff.). Fl. Dec. Jan.

2. E. PETIOLATUS, (*Monocera petiolata*, Jack. Mal. Misc. in Hook. Bot. Misc. II. 86; *E. integra*, Wall. Cat. 2668; Hf. Ind. Fl. I. 408; *E. ovalis*, Miq. in Suppl. Fl. Sum. 406).

HAB. Tenasserim (Helf. teste Masters).

3. E. BRACTEATUS, Kurz in Journ. As. Soc. 1871. 48; Hf. Ind. Fl. I. 406).

HAB. Tenasserim, in tropical forests of Thoungyeen (Brandis); Moulmein (Falconer). Fl. March, Apr.

4. *E. simplex*, Kurz MS.

HAB. Tenasserim (Griff. 701).

Evidently nearly allied to *E. aristatus*, Roxb. but differing in the shape of the leaves and the glabrous racemes. The flowers conform to those of the preceding species. Griffith's specimens from E. Bengal (No. 702) differ only by a puberulous inflorescence and may also belong here.

5. E. GRANDIFLORUS, Smith in Rees Cyc. No. 5. (*Monoceras lanceolatum*, Hassk. Cat. Bog. 208; Miq Fl. Ind. Bat. I/2. 212; *Monocera grandiflora*, Hook. Bot. Mag. t. 4680; *E. lanceolatus*, Bl. Bydr. 129).

**HAB.** Martaban, not rare along the banks of rivers in Toukyeghat District E. of Toungoo.

6. E. GRANDIFOLIUS, Kurz in Journ. As. Soc. Beng. 1872, 294.

HAB. Frequent in the tropical forests of the eastern slopes of the Pegu Yomah and Martaban down to Tenassserim. Fr. Febr. March.

7. E. RUGOSA, Roxb. Fl. Ind. II. 596; Wall Cat. 2658. A. C.; Hf. Ind. Fl. I. 405. (*Monocera rugosa*, Wight Ill. I. 83 and Ic. t. 61).

HAB. Frequent in the tropical forests, especially along choungs, of the eastern slopes of the Pegu Yomah and Martaban. Fl. March, Apr.

Masters refers Wallich's *E. rugosus* to *E. tuberculatus*, Roxb. without giving his reasons for so doing.

- #### 8. E. LITTORALIS. T. and B. MS.

HAB. Tenasserim, Moulmein (Falconer). Fr. Febr.

*N. B.*—What I have from the Botanical Gardens, Buitenzorg, under

the name of *Monoceras obtusum*, Hassk. belongs to *E. rugosus*. The Tenasserim plant (with which Griffith's No. 700 is identical) has very thick and obtuse leaves, and is in my opinion a distinct species. I have therefore retained the MS. name of Teysm. and Binnend. for the plant.

9. E. VARUNUA, Ham. ap. Hf. Ind. Fl. I. 407.

HAB. Chittagong (teste Masters).

Differs from *E. prunifolius*, Wall. solely by the silvery silk-hairy inflorescence and larger flowers.

10. E. FLORIBUNDUS, Bl. Bydr. 120; Miq. Fl. Ind. Bat. I/2. 210; Hf. Ind. Fl. I. 401. (*E. serratus*, Roxb. Fl. Ind. II. 596).

HAB. Frequent in the tropical forests, along choungs, of the Martaban hills E. of Toungoo down to Tenasserim; also Chittagong. Fl. Apr.

The species is easily recognised in a dried state by its peculiar blistered opaque leaves.

11. E. HYGROPHILUS, Kurz, MS.

HAB. Frequent in the swamp forests of the alluvial plains of Pegu and Martaban; also Upper Tenasserim (Falc.) Fl. Jan. March.

I looked for some time upon this species as a variety of *E. photiniae-folius*, but the habitat as well as the structure of the leaves are inconsistent with such a view. It is nearest to *E. lanceæfolius*, Roxb., but differs by obtuse or rounded leaves and beardless anthers.

12. E. LANCEÆFOLIUS, Roxb. Fl. Ind. II. 598; Hf. Ind. Fl. I. 402.

HAB. Tenasserim (teste Masters.)

13. E. GANITRUS, Roxb. Fl. Ind. II. 592; Hf. Ind. Fl. I. 400. (*Ganitrus sphæricus*, Gærtn. fruct. II. 271. t. 139; Wight Ic. t. 66; *E. cyanocarpus*, Mast. in Hf. Ind. Fl. I. 406).

HAB. Chittagong.

14. E. LACUNOSUS, Wall. Cat. 6858.

HAB. Not unfrequent in the tropical forests and along choungs in the moister upper mixed forests of Pegu and Martaban down to Tenasserim. Fl. May, July; Fr. March, Apr.

15. E. WALLICHII, (*E. longifolius*, Wall. Cat. 6682; Hf. Ind. Fl. I. 409. non Bl.)

HAB. Not unfrequent in the Eng and low forests from Martaban (Toukyeghat) down to Upper Tenasserim; also base of Pegu Yomah; Ava (Wall.)

I have often met with the tree, but always without flowers or fruit. The leaves generally resemble *E. Ganitrus* but are puberulous all over or, in very old ones, only beneath along the nerves, and so are the petioles and branchlets. It appears to be a distinct species.

16. E. ROBUSTUS, Roxb. Fl. Ind. II. 597; Wight Ic. t. 64; Hf. Ind. Fl. I. 402. (*E. Helpéri*, Kurz And. Rep. ed. 2. 32. and Mast. in Hf.

Ind. Fl. I. 402 E. sp. Griff. Not. Dicot. 517. t. 592. f. 2).

HAB. Frequent in the tropical forests of Martaban and Tenasserim; also Andamans; and Chittagong (teste Mast.) Fl. Apr. May; Fr. Aug.

N. B.—*E. cuneatus*, Wight, is noted by Masters as growing in Chittagong, Birma, and Tenasserim. I do not know the species. Possibly the Burmese localities refer to *E. lacunosus*, Wall.

17. E. STIPULARIS, Bl. Bydr. 121; Miq. Fl. Ind. Bat. I/2 210; Hf. Ind. Fl. I. 404.

HAB. In tropical forests of Martaban and Tenasserim, up to 3000 feet elevation; also Rangoon District (Brandis). Fl. May.

#### *Doubtful species.*

1. E. LEPTOSTACHYA, Wall. Cat. 2672; Hf. Ind. Fl. I. 403.

HAB. Tenasserim (Helf. teste Mast.).

Masters states that the species is very like *E. robustus* but that the anthers are bearded, while in *E. robustus* itself he tells us that the anthers are both bearded and beardless.

2. E. LUCIDUS, Mast. in Hf. Ind. Fl. I. 403, non Roxb.

HAB. Chittagong (Griff. teste Mast.).

Masters identifies his specimens with Roxburgh's plant, which the late Dr. Anderson had already recognised as an *Euphorbiaceæ* and which is *Cleidion Javanicum*, Bl. I doubt the correctness of the habitat given for the reason that Griffith had never visited Chittagong.

I have not seen *E. oblongus*, Gærtn. from Moulmein.

#### *LINEÆ.*

##### *Conspectus of species.*

*Trib. I. EULINEÆ.* Petals twisted. Perfect stamens as many as petals. Capsule opening septicidally. Herbs or small shrubs.

1. REINWARDTIA. Calyx glabrous. Styles 3 or 4. Capsule 3-4-celled.

2. LINUM. Calyx glabrous or pubescent. Styles 5. Capsule 5-celled.

*Trib. II. ERYTHROXYLEÆ.* Petals usually imbricate, rarely twisted, with a basal scale inside. Perfect stamens twice as many as petals. Fruit a drupe. Shrubs or trees.

3. ERYTHROXYLON. Petals with a double basal scale inside. Pedicels 1-flowered, axillary.

#### *Reinwardtia, Dum.*

1. R. INDICA, Dum. Comm. Bot. 1322. 19. (*R. trigyna*, Planch. in Hook. Journ. of Bot. VII. 522; Hf. Ind. Fl. I. 412.; *Linum trigynum*, Roxb. Fl. Ind. II. 1832. 110; Bot. Mag. t. 1100; Sm. Exot. Bot. 31. t. 17; *Linum repens*, Don. Prod. Nep. 1826. 217).

HAB. Martaban, Karen country (Riley); Chittagong.

**Erythroxylon, L.***Conspectus of species.*

§ 1. *Erythroxylon*. Styles free from the base.

Leaves oblong lanceolate, shortly acuminate glaucescent beneath; pedicels about  $\frac{1}{2}$  in. long, ... ... ... ... ... *E. Kunthianum*.

§ 2. *Sethia*. Styles united for about  $\frac{1}{2}$  of their length.

Leaves obovate or oblong, blunt; pedicels usually 3 lin. long, rarely longer, ... *E. monogynum*.

Leaves broadly obovate or oblong, retuse; pedicels short, ... *E. cuneatum*.

1. *E. KUNTHIANUM*, Kurz in Journ. As. Soc. Beng. 1872. 294; Hf. Ind. Fl. I. 414. (*Sethia?* *Kunthiana*, Wall. Cat. 6849, nomen chartaceum).

HAB. Not unfrequent in the drier hill-forests, especially the stunted ones, on the Martaban hills E. of Toungwoo, at 5000 to 7200 ft. elevation; also Tenasserim, top of Thoungyeen hills, (Parish). Fl. March.

2. *E. MONOGYNUM*, Roxb. Corom. Pl. I. t. 88. and Fl. Ind. II. 449; Hf. Ind. Fl. I. 414. (*E. Indicum*, Bedd. Fl. Sylv. Madr. t. 81; *Sethia Indica*, DC. Prod. I. 576; Wight Ill. t. 48).

HAB. Pegu (accord. Dr. Mason).

3. *E. CUNEATUM*, (*Urostigma?* *cuneatum*, Miq. in Hook. Lond. Journ. VI. 585; *E. Burmannicum*, Griff. Not. Dicot. 468. t. 581. f. 3.; Hf. Ind. Fl. I. 414).

HAB. Tenasserim, from Moulmein (Faleoner, Wall.) down to Mergui, along the coast of Madamaca (Griff.). Fl. Apr.

**MALPIGHIAEÆ.***Conspectus of genera.*

*Trib. I. MALPIGHIEÆ*. Carpels never winged, free or united into a fleshy or drupaceous 1- to 3-celled fruit. Usually erect shrubs, with usually opposite leaves and connate stipules.

1. *MALPIGHIÆ*. Calyx 6-10-glandular. Filaments at base glabrous. Ovary entire, 2-3-celled, styles terminal and free. Drupes containing 3 or fewer crested nuts.

*Trib. II. HIREÆ*. Samaras 1-3, obliquely accumbent to a short pyramidal torus, or the carpels united into a winged indehiscent capsule. Woody climber or rarely erect shrubs or trees, the stipules minute or wanting.

\* Stamens definite, usually 10, all perfect.

O Style 1, rarely 2.

2. *HIPTAGE*. Calyx with a single large gland adnate to the pedicel. Carpels 3-winged. Trees or woody climbers.

O O Styles 3. Ca'yx without glands.

3. *ASPIDOPTERYS*. Petals not clawed. Stigmas capitellate. Samaras broadly winged all round. Woody climbers.

\* \* Stamens numerous. Styles 3, consolidated. Calyx minute, without glands.

4. *PLAGIOPTERON*. Capsules indehiscent, 3-4-winged as in *Hiptage*. Petals reflexed. Woody climbers.

### Malpighia, L.

\*1. *M. COCCIGERA*, L. sp. pl. 611. (*M. coccifera*, L. sp. pl. ed. Rehb. II. 371; DC. Prod. I. 578; Walp. Rep. V. 152; Bot. Reg. t. 568. *M. heteranthera*, Wight Ill. 138. t. 49).

HAB. Frequently cultivated, and sometimes domesticated in rubbishy places round villages in Chittagong. Fl. H. and R. S.; Fr. R. S.

### Hiptage, Gærtn.

#### *Conspectus of species.*

Scandent diffuse shrub, branched almost from the base; leaves larger, more acute and greyish green; bark grey, ... ... ... ... *H. Benghalensis*.

A lofty climber, the stem simple, cable-like, up to 100 ft. long; leaves smaller and broader, often bluntnish apiculate, glabrous and glossy, dark-green; bark dark-brown, ... ... ... ... ... ... ... ... *H. obtusifolia*.

A small tree; flowers often pale pink with the usual yellow basal blotch; capsule not ridged on top, the wings shorter and broader, obliquely truncate; bark dark-brown, ... ... ... ... ... ... ... ... *H. candicans*.

1. *H. BENGHALENSIS*, (*Banisteria Benghalensis*, L. sp. pl. 356; *H. Madablota*, Gærtn. Fr. II. 169. t. 116. f. 4; Wight Ill. t. 50; Hf. Ind. Fl. I. 418; *Gærtnera racemosa*, Roxb. Corom. Pl. I. t. 18 and Fl. Ind. II. 368).

HAB. Not unfrequent in the dry and open, especially the Eng. forests of Prome and Martaban; also Tenasserim, Moulmein. Fl. March, Apr.; Fr. Apr. May.

2. *H. obtusifolia*, DC. Prod. I. 583. (*Gærtnera obtusifolia*, Roxb. Fl. Ind. II. 369).

HAB. Rather rare in the tropical forests in the deep ravines of the Pegu Yomah. Also Ava, Khakyen hills (J. Anderson) Fl. March.

It is difficult to give good characters for this species, but it is in my opinion certainly distinct.

3. *H. CANDICANS*, Hf. Ind. Fl. I. 419. (*H. arborea*, Kurz in Pegu Rep. and in Journ. As. Soc. Beng. 1873. 228).

HAB. Frequent in the dry and eng forests of the Prome District and there forming the upper dry forests. Fl. March; Fr. March, Apr.

### Aspidopterys, A. Juss.

#### *Conspectus of species.*

\* Gynobase persistent after the fall of the samaras, conical, acute, exserted, surrounded by 3 smooth acute disk-lobes.

Leaves tomentose beneath, acuminate; ovary hirsute; nucleus of samara with or without a crest, ... ... ... ... ... ... *A. nutans*.

Leaves tomentose beneath, more or less glabrescent, apiculate; ovary quite glabrous; nucleus of samara with a crest, ... ... ... ... *A. tomentosa*.

\* \* Gynobase absent after the fall of the samaras or minute and shorter than the disk-lobes, the thick 3-lobed often cup-shaped disk usually wrinkled.

✗ Samara nearly as broad as long, with a vertical crest between the wings.  
All parts, also the ovary, quite glabrous; disk in fruit about 1 lin. broad, ... *A. concava*.  
Leaves more or less puberulous along the nerves beneath; disk doubly smaller, hardly wrinkled, ... ... ... ... ... *A. Helferi*.

✗ ✗ Samara more than twice as long as broad, not crested.

All parts glabrous; ovary hirsute, ... ... ... ... *A. Roxburghii*.  
All parts hirsute; ovary glabrous, ... ... ... ... *A. hirsuta*.

1. *A. NUTANS*, Hf Ind. Fl. I. 421, non Juss. (*A. lanuginosa*, A. Juss. in Arch. Mus. Nat. Hist. III. 512; *Hiraea nutans*, Roxb. Fl. Ind. II. 447, non Wall.).

HAB. Chittagong (Wall. 1057); Ava, Bhamo (J. Anderson). Fr. Jan.

2. *A. TOMENTOSA*, A. Juss. in Arch. Mus. Hist. Nat. III. 514; Walp. Rep. V. 299. (*Hiraea tomentosa*, Bl. Bydr. 225).

HAB. Not unfrequent in the tropical forests of Martaban E. of Tounghoo; Ava, Khakyen hills (J. Anderson). Fl. March; Fr. May.

3. *A. CONCAVA*, A. Juss. in Arch. Mus. Hist. Nat. III. 509; Hf. Ind. Fl. I. 420.

HAB. Tenasserim, from Moulmein to Mergui. Fl. Fr. Apr.

4. *A. HELFERIANA*, Kurz MS.

HAB. Tenasserim, Moulmein district (Falc., Helf. No. 923.) Phanoë (Wall. No. 1057 not in Cat.) Fl. Febr.

Nearest to *A. concava*, from which it is distinguished by the different leaves and structure of the retuse-narrowed samara-wings, the smaller almost not wrinkled disk-lobes, etc.

5. *A. ROXBURGHIANA*, A. Juss. in Arch. Hist. Nat. III. 511; Hf. Ind. Fl. I. 420. (*Triopteris Indica*, Willd.; Roxb. Corom. Pl. II. 32. t. 160; *Hiraea Indica*, Roxb. Fl. Ind. II. 247).

HAB. Ava; (Tenasserim, Salween river, teste Hf.).

6. *A. HIRSUTA*, A. Juss. in Arch. Mus. Hist. Nat. III. 512. t. 17; Hf. Ind. Fl. I. 421. (*Hiraea hirsuta*, Wall. Pl. As. rar. I. 13. t. 13).

HAB. Ava, Taong-dong; Prome hills. (Wall.) Fl. Fr. Aug. Nov.

#### *Doubtful species.*

1. *A. ROTUNDIFOLIA*, A. Juss. in Arch. Mus. Hist. Nat. III. 514; Walp. Rep. V. 299. (*Hiraea rotundifolia*, Roxb. Fl. Ind. II. 448).

HAB. Chittagong (Roxb.) Fl. March, Apr.

Hooker refers this species to his *A. nutans*, but the description agrees better with *A. tomentosa*.

**Plagiopteron, Griff.**

1. P. SUAVEOLENS, Griff. in Macl. Calc. Journ. IV. 244. t. 13; Hf. Ind. Fl. I. 399.

HAB. Tenasserim, Mergui (Griff. 679).

**ZYGOPHYLLEÆ.***Conspectus of genera.*

1. TRIBULUS. Stamens 10. Fruits dry, composed of 5-12 cocci usually winged or spiny. Herbs with pinnate leaves.

**Tribulus, L.***Conspectus of species.*

Flowers 1-2 in. in diameter, the peduncles as long or longer than the leaves, *T. cistoides*. Flowers  $\frac{1}{3}$ - $\frac{3}{4}$  in. in diameter, the peduncles shorter than the leaves, ... *T. lanuginosus*.

1. *T. cistoides*, L. sp. pl. 554; Jacq. Hort. Schœnb. I. t. 103; Bot. Reg. t. 791; Hf. Ind. Fl. I. 423.

HAB. Tenasserim, Mergui (teste Edgew. and Hf.).

2. *T. LANUGINOSUS*, L. sp. pl. 553; Roxb. Fl. Ind. II. 401; Wight Ic. t. 98. (*T. terrestris*, L. sp. pl. 554; Sibth. Fl. Græc. t. 372; Rehb. Fl. Germ. V. t. 161; Hf. Ind. Fl. 423).

HAB. Ava, apparently frequent in the Irrawaddi valley; Prome District. Fl. March, Apr.

N. B.—I am not sure whether *T. terrestris*, L. and *T. lanuginosus* are not really different species.

**GERANIACEÆ.***Conspectus of genera.*

*Trub. I. GERANIÆ.* Flowers regular or nearly so. Sepals imbricate. Glands alternating with the petals. Fertile stamens as many or 2 or 3 times as many as petals. Capsules dry, the valves elastically rolled upwards, or rarely indehiscent.

1. *GERANIUM*. Perfect stamens 10, or rarely fewer. Ovary-cells 2-ovuled. Capsule dehiscent, beaked.

*Trub. II. OXALIDEÆ.* Flowers regular. Sepals imbricate. Glands none. Stigmas capitate. Ovary-cells with 2 or more ovules.

\* Capsule dry or nearly so, dehiscent. Herbs.

2. *OXALIS*. Stamens 10. Capsule dehiscing loculicidally, the valves cohering with the axis. Leaves usually digitately compound.

3. *BIOPHYTUM*. Stamens 10. Capsule dehiscing loculicidally, the valves usually separating from the axis to the base. Leaves pinnate.

\* \* Berry fleshy, indehiscent. Shrubs or trees.

4. *AVERrhoa*. Stamens 10, of which 5 often reduced to staminods. Styles distinct. Ovary-cells many-ovuled. Seeds arillate or without arillus. Trees with pinnate leaves.

*Trub. III. BALSAMINEÆ.* Flowers regular, Sepals usually coloured, the posticus spurred Anthers almost connate.

5. IMPATIENS. The lateral petals connate in pairs. Capsule elastically dehiscent.  
 6. HYDROCERA. All petals free. Drupes safty, indehiscent.

### Oxalis, L.

1. O. CORNICULATA, L. sp. pl. 624; Roxb. Fl. Ind. II. 457; Wight Ic. t. 18; Jacq. Oxal. t. 5; Fl. Dan. V. t. 873 and X. t. 1753; Engl. Bot. XXIV. t. 1726; Sibth. Fl. Graec. t. 451; Sturm. Germ. Fl. I. t. 1; Rehb. Fl. Germ. V. t. 199; Hf. Ind. Fl. I. 436. (*O. pusilla*, Salisb. in Linn. Trans. II. 243; Roxb. Fl. Ind. II. 457).

HAB. Frequent in rubbishy places, tounyas, garden-lands, along roadsides, etc., all over Burmah up to 3500 ft. elevation Fl. Fr.  $\infty$ .

### Biophytum, DC.

#### *Conspectus of species.*

Leaflets nearly straight, in 10-14 pairs; flowers larger; capsule usually much shorter than the calyx; seeds obliquely transverse-furrowed, ... ... ... *B. sensitivum*.

Leaflets very unequal at base, in 12-25 pairs; peduncles with a clubbed mass of bracts at apex, ... ... ... ... ... ... *B. adiantoides*.

Leaflets equal, in 10-20 pairs; flowers smaller; capsule almost as long as or a little longer than the sepals, small; slender herb, ... ... ... ... ... *B. Reinwardtii*.

1. B. SENSITIVUM, DC. Prod. I. 690; Wight Ill. t. 62. f. 9; Hf. Ind. Fl. 436. (*Oxalis sensitiva*, L. sp. pl. 622; Roxb. Fl. Ind. II. 457; Bot. Reg. XXXI. t. 68; Jacq. Oxal. t. 78; *B. Candolleanum*, Wight Ill. t. 62).

HAB. Frequent in rubbishy places, on brick-laid paths, fields and tounyas, etc., all over Burma. Fl. May, June; Fr. R. S.

2. B. ADIANTOIDES, Wight ap. Hf. Ind. Fl. I. 437.

HAB. Tenasserim, Mergui (Griff.).

3. B. REINWARDTII, Walp. Rep. I. 476; Hf. Ind. Fl. I. 437.

HAB. Not unfrequent on poor and rocky soil in shrubberies and in the dry and open, especially the Eng. forests all over Burma from Chittagong and Ava down to Tenasserim. Fl. Apr. May.

### Averrhoa, L.

#### *Conspectus of species.*

Fruits sharply angled; seed arillate, ... ... ... ... ... *A. Carambola*.

Fruits bluntnish angular; seeds without arillus, ... ... ... ... ... *A. Bilimbi*.

\*1. A. CARAMBOLA, L. sp. pl. 613; Roxb. Fl. Ind. II. 450; Griff. Not. Dicot. 455. t. 540. f. 4; Bedd. Fl. Sylv. Madr. t. 39; Hf. Ind. Fl. I. 439.

HAB. Much cultivated in gardens all over the country. Fl. H. S. and R. S.; Fr. C. S.

\*2. A. BILIMBI, L. sp. pl. 613; Roxb. Fl. Ind. II. 451; Bedd. Fl. Sylv. t. 117; Hf. Ind. Fl. I. 439.

HAB. Rarely cultivated in Pegu and Tenasserim. Fl. H. S.; Fr. R. S.

The differences between *A. Carambola* and *A. Bilimbi* appear to me to be of generic value.

### Impatiens, L.

#### *Conspectus of species.*

\* Leaves all opposite or occasionally ternately-whorled.

Leaves almost sessile; flowers rather large, wings obtuse, the spur long and slender, inflexed, ... ... ... ... ... *J. Chinensis.*  
Exactly as the preceding, but the spur short and inflexed, ... ... ... *J. reticulata.*  
Leaves on long petioles; flowers rather small, the wings acuminate, the spur short, incurved, ... ... ... ... ... *J. circæoides.*

\* \* Leaves all alternate.

O Flowers shortly racemose, umbellate or corymbose at the ends of the long peduncles.

Leaves petioled; flowers small with a long straight or curved spur, *J. Tavoyana.*  
O O Peduncles 1- or rarely 2- or 3-flowered, shorter than the leaves.

X Spur usually much shorter than the corolla

† Flowers 1-2 in. long.

Stem succulent, the thickness of a goose-quill; leaves narrow, pubescent or glabrescent shortly petioled. (Spur often very long and slender), ... *J. Balsamina.*

Stem the thickness of the finger, short; leaves elliptic or ovate, glabrous, long-petioled, ... *J. Parishii.*

† † Flowers small.

Glabrous, slender; leaves long-petioled, narrow, ... ... *J. capillipes.*

X X Spur longer than the corolla.

Very slender, glabrous; capsule puberulous; flowers rather large, *J. violæflora.*

1. *J. CHINENSIS*, L. sp. pl. 1328; Hf. and Th. in Linn. Proc. IV. 119; Hf. Ind. Fl. I. 444. (*J. fasciculata*, Lamk. Enc. Méth. I. 359; Wight Ic. t. 748; Hook. Bot. Mag. t. 4631; *J. heterophylla*, Wall. in Roxb. Fl. Ind. ed. Car. II. 458; *I. setacea*, Coleb. in Hook. Exot. Fl. t. 137).

HAB. Birma (Wall.) Tenasserim (Helf.)

2. *J. RETICULATA*, Wall. Pl. As. rar. I. 19. t. 19; Hf. Ind. Fl. I. 448.

HAB. Common in the open especially the low forests and in cultivated lands all over Burma from Ava and Martaban down to Tenasserim. Fl. Nov. Deeb.

Hardly more than a form of the preceding. *J. tomentosa*, Heyne, is stated by Hf. and Thoms. in Linn. Proc. to grow in Pegu, but the habitat is omitted in Hf. Fl. Ind. It seems to be the above species, at any rate the Wallichian specimens cited belong here.

3. *J. circæoides*, Wall. ap. Hf. and Th. in Linn. Proc. IV. 130; Hf. Ind. Fl. I. 453.

HAB. Rare in shady places in the moister upper mixed forests of the southern parts of the Pegu Yomah; Tenasserim, Tavoy (Wall.) Fl. Jan.

4. J. TAVOYANA, Bth. ap. Hf. and Th. in Linn. Proc. IV. 142.

HAB. Tenasserim, Moulmein District (Zwakabin; Thoungyeen, etc.,) down to Tavoy. Fl. Octob.

\*5. J. BALSAMINA, L. sp. pl. 1328; Roxb. Fl. Ind. I. 651; Hf. and Th. in Linn. Proc. IV. 131; Hf. Ind. Fl. I. 453. (*J. Malayensis*, Griff Not. Diéot. 457. t. 576. f. 2?).

Var.  $\alpha$ . VULGARIS, Hf. and Th. l. c.

Var.  $\beta$ . COCCINEA, Hf. and Th. l. c. (*J. coccinea*, Sims. Bot. Mag. t. 1256).

HAB. Much cultivated by all natives and often as wild in toungyas and in rubbishy places around villages. Fl. H. S.

6. J. PARISHII, Hf. Ind. Fl. I. 456.

HAB. Tenasserim, on limestone rocks near Moulmein (Parish).

7. J. CAPILLIPES, Hf. and Th. in Linn. Proc. IV. 135; Hf. Ind. Fl. I. 456.

HAB. Tenasserim, Moulmein District on limestone rocks.

8. J. VIOLÆFLORA, Hf. Ind. Fl. I. 457.

HAB. Tenasserim, Moulmein (Lobb.)

#### Hydrocera, Bl.

1. H. TRIFLORA, WA. Prod. I. 140; Miq. Fl. Ind. Bat. I/2. 132. (*Impatiens natans*, Willd. sp. pl. I. 1175; Roxb. Fl. Ind. I. 652).

HAB. Not unfrequent along borders of ditches, watercourses and rice-fields of the Pegu plains. Fl. R. S.

